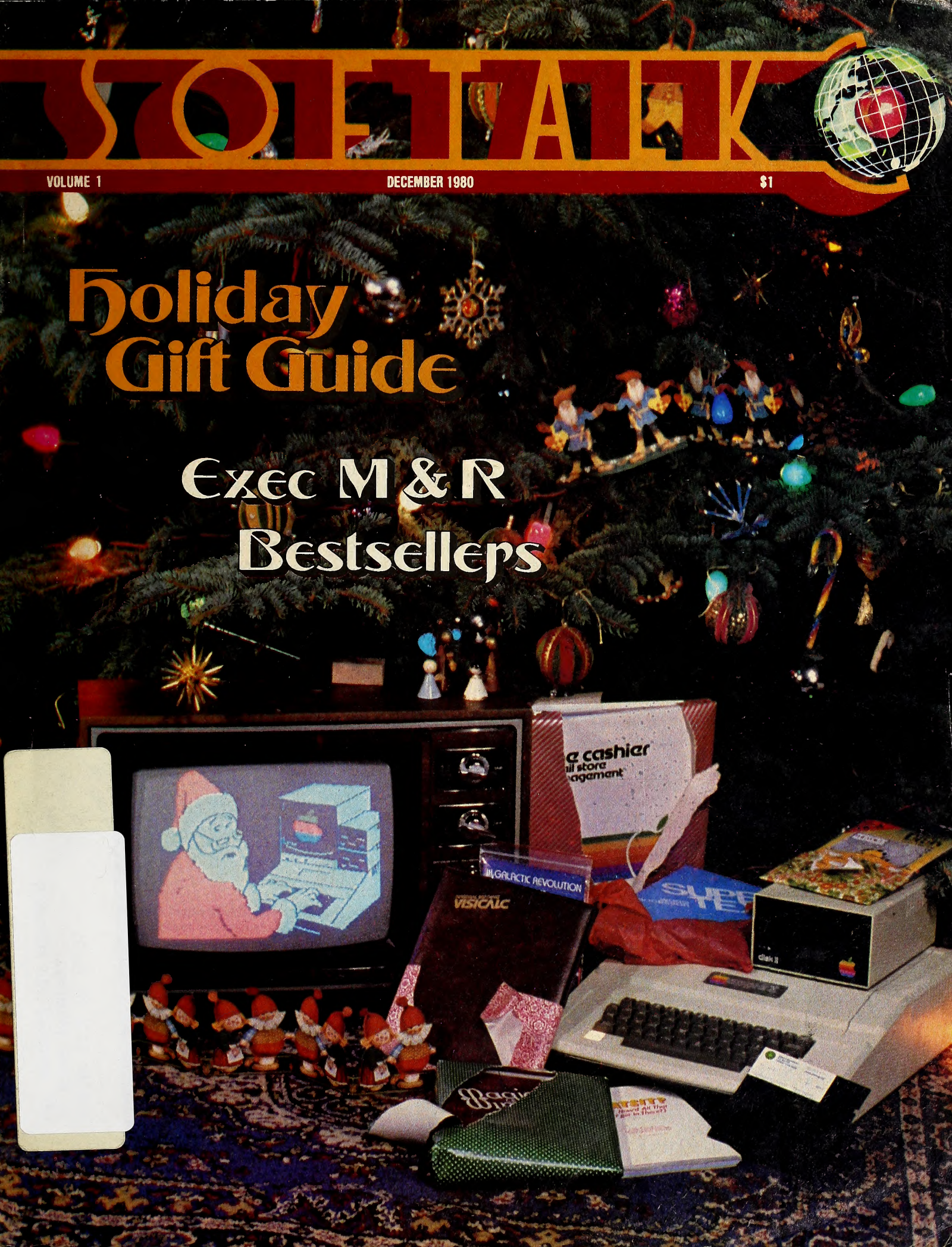
SOFTALK

VOLUME 1 DECEMBER 1980 $1

Holiday Gift Guide

Exec M & R Bestsellers



WE CAN TAKE YOU FROM WATERLOO TO THE SUPER BOWL. (By way of the North Atlantic.)

In the few short months since we introduced Computer Bismarck™, we've transported over 2500 adventurous minds to the North Atlantic – there to recreate the historic battle between the awesome German warship and the British Home Fleet. The startling realism and excitement of that experience have prompted many well-seasoned travelers to proclaim it "...unique among computer games and board games alike.*" One enthusiast had this to say: "The wealth of detail...is hardly short of fantastic. Only real war rooms...in the Pentagon have ever before been able to simulate a battle in this manner.**" Now we offer two more strategy games to embark you on new flights of the imagination.

COMPUTER NAPOLEONICS™

takes you to the battlefields of Waterloo on the fateful day of June 18, 1815. Here, the greatest battle ever fought is about to begin, awaiting only your commands to set the amassed armies in motion.

You and your friend choose your role – either as the military genius, Napoleon, or as the Duke of Wellington, the iron-willed leader of the Anglo-Allied forces. The video screen displays the map of the Belgian countryside with the artillery, infantry, and cavalry units under your respective commands.

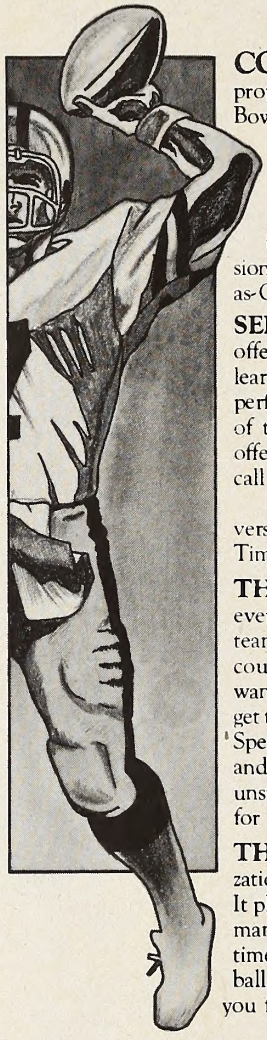
AS NAPOLEON, you must utilize your superior combat strength and numbers to deal Wellington a quick and decisive defeat before his Prussian ally can supply reinforcements. Speed is of the essence. But any tactical blunders in military deployment will result in a repeat of history – Napoleon's ignominious defeat.

AS THE DUKE OF WELLINGTON, you must not only survive the onslaught of the French artillery, cuirassiers, and the dreaded Imperial Guard, you must also inflict sufficient damage to Napoleon's forces to prevent his relentless northward march of conquest.

THE COMPUTER, in our solitaire scenario, plays Wellington while you play Napoleon. Two levels of play are provided by making the entry of Prussian reinforcements variable. This makes the need for French military decisiveness and devastating execution even more critical.

FOR THE NOVICE AND THE ADVANCED. Computer Napoleonics has all the advantages of your basic, traditional wargame –meticulous detail, realism, and playability. Plus one. Because the computer keeps track of all the rules, neither player can make an illegal move. This makes learning it a cinch (mastery is quite another matter), and it will convert the novice wargamer into a fanatic in no time.

The advanced wargamer will find the computer a worthy opponent indeed, and the two levels of play in the solitaire version will challenge the most experienced of strategists.



COMPUTER QUARTERBACK™

propels you onto the playing field of the Super Bowl. From its multiple offensive and defensive plays and its real-time playing conditions to the animated video display of the gridiron and the halftime statistics, no strategy football game has ever been more complete in detail or as exciting in realism. Three versions are offered: Semi-Pro, Pro, and Computer-as-Opponent.

SEMI-PRO presents you with a choice of 18 offenses and 14 defenses. Here, you will begin to learn the intricacies of football; the thrill of the perfectly executed two-minute drill; the agony of the fumble, interception, and penalty. On offense, you will learn to read the defense and call audibles as needed.

After you have mastered the Semi-Pro version, it's time to move on to the Big Time...the Pro version!

THE PRO VERSION not only gives you every offense (36) and defense (24 plus double-teaming capabilities and special alignments) you could ever want, it also gives you the team you want! With 2.7 million computer dollars, you get to draft a team to your style and specifications. Spend more on your quarterback and receivers and your passing game may very well be unstoppable...but your running game may suffer for lack of funds.

THE COMPUTER eliminates all the organizational drudgery of conventional board games. It plays scorekeeper, referee, umpire, and linesman. As timekeeper, it makes you play in real-time. Take longer than 30 seconds to hike the ball and five yards will be marched off against you for delay-of-game.

"THE ROBOTS" is the team most ably coached by your friendly computer. It's ready to play any time you are. It even "learns" your tendencies and patterns through time, and it will make the necessary tactical adjustments. It plays so well you must be in top form to stand a chance against it.

All you need to start on these mind journeys is an Apple II with Applesoft ROM card, 48K memory, and a mini-floppy disc drive. For $59.95, Computer Napoleonics comes with the game program mini-disc, two mapboard cards, a rule book, and two player-aid charts. Computer Quarterback, for $39.95, gives you the game disc, a rule book, and four play diagram charts.

Credit card holders, call **800-648-5600 (toll free)** and charge your order to your VISA or MASTERCHARGE. In Nevada, call 800-992-5710. For Computer Quarterback, ask for Operator 178; for Computer Napoleonics, Operator 179.

While you're at it, you can also get our other games:

- *Computer Bismarck* for your Apple: $59.95 (Operator 180)

Computer Bismarck, TRS-80 48K Disc: $59.95; 32K Cassette: $49.95

- *Computer Ambush* (a tactical simulation of man-to-man combat in World War II) for your Apple: $59.95 (Operator 181)

To order by mail, send your check to Strategic Simulations Inc., Dept. ST, 450 San Antonio Road, Suite 62, Palo Alto, CA 94306. Our 14-day money back guarantee assures your satisfaction.

SSI STRATEGIC SIMULATIONS INC.

*Creative Computing, Aug. 1980.
**Popular Mechanics, Aug. 1980.

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SOFTALK

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CONTENTS

Intelligent Stocking Stuffers

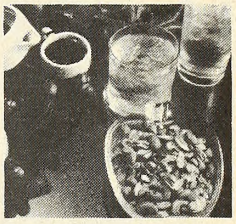
Guide to computer gifts for family and friends with Apples.

CONTRIBUTED BY PUBLISHERS AND MANUFACTURERS 6

An Eye for the Apple

Digitizers bring direct television images to your monitor thraugh Apple—then Apple tells you all about them, even identifies people.

ROBERT KOEHLER 18



Christmas Spirits for Holiday Hosts

The new Super Bar and Wine Guide makes a bartender and wine steward af yaur Apple, just in time far haliday entertaining 31

Exec M&R: Pioneer in Peripherals for Micros

Marty and Rana Spergel began at the beginning, when Apple was a seedling in the minds of members of the Homebrew Users Graup.

PETER O'HALLIGAN 34

DEPARTMENTS

Oracle '81: Contest 2
More Contest Winners 2
Open Discussion 3
Assembly Lines: Roger Wagner 14
Tradetalk 17
Marketalk: Reviews 20
Marketalk: News 33
Softalk Presents the Bestsellers 36

ADVERTISERS INDEX

Advanced Business Technology 33
Automated Simulations 3
Avant Garde 8
Balance Sheet 19
Book Publishing Company 32
Continental Software 10
Eaton 16
Edu-ware . . . . . Cover 3
FSI 4
Hayden Book Company 5
Microlab 17
Muse 13, 30
On-Line Systems 21, 23, 25, 27
Rainbow Computing 28
Small Business Computer Systems 31
Softape 24, 26
Software Publishing Corp. . . . . Cover 4
Strategic Simulations . . . . . Cover 2, 11
Southwestern Data Systems 29
Spectrum Software 20
Synergistic Software 9
Syntauri, Ltd. 35
Technical Analysis Group 15

PREVIEWS

Speaking of January . . . Apple in the Big Apple . . . You cast your vote for the Most Popular Programs Ever . . . Play the Robot Game and learn programming . . . World of Computer Space—beginning with Budge . . . Meet the Disk Doctor, for sure . . . and more.

...Even More Contest Winners Here!

Thirteen correct entries were received from among 1,381 submissions in *Softalk*'s October contest, which called for entrants to count the number of apples of all sorts found on the pages of the October *Softalk*.

As in the case of all ties in *Softalk* contests, Apple's random number generator was consulted to determine the winner, who was Lawrence Landa of Brooklyn, New York. K. W. Park of Cary, Illinois, was awarded second and Yarlen Stickles of Glendale, Arizona, was chosen third. Landa had submitted only one entry in the contest.

Selecting from among the products of *Softalk*'s October advertisers, Landa chose the *Magic Window* from Artsci as his prize. Park, who had asked for D.C. Hayes's *Micromodem II* if he was first, earned copies of Goblins by Programma and *Haunted House* by Adventure International. Stickles, who had also asked for the *Magic Window* as a first-place prize, wins either *Goblins* or *Haunted House*.

Paging Apples. An enumeration of the number of apples on each page follows for the benefit of those entrants who wish to check their entries:

cover—5	4— 8	9— 2	14— 7	19— 4	23—14	27—12
cover 2—6	5—26	10— 6	15— 2	20—11	24—23	28—11
1—13	6— 6	11—15	16— 5	21—11	25— 7	cover 3—18
2—20	7— 1	12—16	17— 7	22—15	26— 3	cover 4—7
3—12	8— 8	13— 5	18— 3			

Computers, Etc., of Arkansas Photo

Bob Taylar of the Easter Seal Society of Little Rock, Arkansas, receives a Micro Music Baard fram Sherry Baldwin af Computers, Etc. Supervising Bob at the presentation are two of the children fram the saciety's school, Wendell Linville (left) and Chris Tebbetts. Taylar's entry on behalf of the Easter Seal Society was a winner in Softalk's September cantest asking entrants to predict the results of the first software bestseller poll. The awards presentatian was covered by NBC's Little Rock affiliate on their six a'clack newscast, focussing attention on Apple and Computers, Etc.

CONTEST: ORACLE '81

In the midst of the Christmas/Hanukkah hustle, a new year creeps up and pounces on us, leaving us barely time to wonder, before the band plays "Auld Lang Syne," what that year will bring.

But looking ahead can be fun, especially when good prognostication could win you prizes! *Softalk*'s contest this month consists of exactly that. Test your talents as an oracle on the several subjects listed, put your answers on the coupon (or a facsimile), and ship it in.

Each prediction has a point value, and the highest accumulated point value once the real answers are in—meaning after January 1, 1982—will win a new Apple Disk Drive.

But who wants to wait till 1982 to win a contest? So, the best prediction for each of the individual items will be awarded the prize of that winner's choice from the products of any advertiser in this December 1980 issue of *Softalk*, up to $100 in value, as soon as that answer is revealed. And you're still eligible for other prizes even if you win one.

Scoring. Topics 2 and 5 are worth 10 points per correct prediction, or a possible 30 points per topic. Topic 6 is worth 20 points. All other topics require numerical predictions. Scores for these will result in zero or minus numbers representing the absolute difference between your prediction and the actual number.

Deadline. Entries *must* be postmarked on or before December 31, 1980, for the obvious reason that part of one of the answers will be known on January 1, 1981.

Predict:

1. The combined winning margins of the winner of the Rose Bowl and the winner of the Super Bowl.

2. The winner of the Academy Award for best motion picture of 1980 (the 1981 award) and the best actor and best actress Oscar winners.

3. The average speed of the winner in the Indianapolis 500.

4. The closing price of Apple Computer Inc. stock on July 30, 1981.

5. The two baseball teams that will play in the 1981 World Series and the winner.

6. The software publisher that will make the most appearances on the *Softalk* Bestseller List during 1981.

Mail your entry to Softalk Oracle, 10432 Burbank Boulevard, North Hollywood, CA 91601, postmarked no later than December 31, 1980.

My predictions for 1981 for the six topics are:

1. _____
2. (3 parts) _____
_____
_____
3. _____
4. _____
5. (3 parts) _____
_____
_____
6. _____

The prize I'd like if I win one of the preliminary contests is: _____
_____

Name _____
Address _____
City/State/Zip: _____
Dealer: _____
Your Autograph: _____

(Contest is open to all Apple owners and their immediate families except those in any way associated with *Softalk*. Use of computers in deriving answers to this contest is strictly encouraged. Multiple entries are acceptable, but you may not put more than one entry on a coupon. Photocopies of the coupon are okay, as are handwritten copies on used giftwrap, comic book margins, airplane postcards, the back of the garish tie you got for Christmas, whatever, as long as they're legible and reproduce the entire coupon.)

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OPEN DISCUSSION

Pirate, Thief

I really enjoyed your article in the last issue of *Softalk* concerning the Data Cash decision ["Software Publishers Hear Appealing Decision," October 1980]. I thought you might like to read what we put in our company publication about that same decision.

Your article on piracy was also a very good one ["Pirate, Thief. Who Dares To Catch Him?" by Matthew Yuen, October 1980]. We have a great deal of concern about that here at Intel and are looking at ways to minimize software piracy.
Roger S. Borovoy, Vice President, General Counsel, and Secretary, Intel Corporation, Santa Clara, CA

Intel's article came to much the same conclusion as Softalk's. *It confirms that conclusion with a quote from the court of appeals in the JS&A/Data Cash case; "Statutory copyright limitations would continue to be available to the plaintiff (Data Cash) at any time the plaintiff decided to publish with [copyright] notice."*

The article also reveals that Mr. Borovoy filed a brief as a "friend of the court" before the 7th Circuit Court of Appeals to support Intel's position that software ROM is copyrightable. Intel is the developer and a major manufacturer of microprocessor chips.

I have to admit that the contest was sure a sneaky way to get me to read the magazine all the way through and now I'm glad I did. I particularly enjoyed the articles about the handicapped and software piracy. In reconciliation, I have sent a check to a company that I know I have a program from, because mine was copied from a friend. Nevermore! Thanks for letting me know about it.
Randy Reeves, Cypress, TX

Good job on "Pirate, Thief." Added cost not brought up is the cost to make a disk or tape not copiable.

How do we make our own backup?
D. L. Ames, Winchendon, MA

An interesting sidelight to the computer piracy game has resulted in people buying protected software for the challenge of breaking it. This concept may seem strange considering the price of software, but these people thrive on the most sophisticated protection schemes. To them, it is the ultimate "adventure game."

I've met many Apple owners who have spent much more time breaking a game disk than they ever spent playing the game. And a good portion of these people purchased that disk. In some cases, particularly among the more addicted experts, friends will gladly loan them any program in exchange for an unprotected copy that they can use for trading purposes. Hence, the danger of widespread trading or piracy of a disk doesn't always lie with the person who breaks the disk, but with their loss of control once their friends obtain a copy.

Unfortunately, the software protection business is a paradox. While coding a disk is like a lock, keeping honest people honest, the more sophisticated protection schemes on well-written software attract the best codebreakers. The only consolation to some software houses is that the quality of their programs doesn't interest the pirates or codebreakers.
Jeffrey Stanton, Venice, CA

Your articles on software piracy were very much to the point. An alternative seen by some software producers is to include a piece of hardware in the product so that copies of the software will not run without the hardware. The hardware might not be needed except to prevent piracy, so this obviously increases the price of the software. This increased cost would be needless if it weren't for the piracy problem.

Piracy is not confined to the microcomputer industry. Both the mainframe and minicomputer industries have been plagued by this problem. Their main solution has been to license the software rather than sell it, but this is not practical with the low cost of micro software. It's practical to take legal action against a corporation for a software package

After you play the Temple of Apshai, you can play Sticks and Stones for free.

Within the 200 rooms and catacombs of the Temple of Apshai, untold treasures await you — the hero. All you have to do is elude, outsmart and outwit the beasts, monsters and demons lurking in the dark labyrinth. Spend minutes or hours on this role-playing fantasy — the boldest computer game in our Dunjonquest™ series.

Now, when you order the "Temple of Apshai," you get the "Sticks & Stones" board game for no extra charge. In fact, if you're not satisfied with the "Temple of Apshai," you can return it within 10 days and still keep "Sticks & Stones!"

But don't wait, this special offer is limited. (We'll also send you a catalog outlining our other exciting computer games).

Automated Simulations, Department SO
P.O. Box 4247, 1988 Leghorn Street
Mountain View, California 94040

Please send me the "Temple of Apshai" for:

	Cassette ($24.95)	Disk ($29.95)
TRS-80	☐ 16K, Level II	☐ 32K TRSDOS
APPLE	Not available	☐ 48K Applesoft in ROM
PET	☐ 32K	Not available

(Add $1.00 shipping and handling charge; plus 6% or 6½% tax for California residents.)

Name_____

Address _____

City, State, Zip_____

☐ Check enclosed. Charge to: ☐ VISA ☐ MasterCard

Amount $_____ #_____ Expiration date_____

Or charge by phone: (800) 824-7888, operator 861. In California: (800) 852-7777, operator 861.
If you prefer, call these numbers for a list of the computer stores near you.

OPEN DISC

costing $1,000 or more per copy, but not against an individual for a package costing $100 or less.

The best action is probably as you have started—educate the dealers. If they understand that they are hurting their future business by reducing the incentive for software development, and they in turn educate their customers in this regard, then the problem will be significantly reduced. Perhaps an industry standard warning form should be packed with each software package shipped, stressing these points rather than the legalities of the situation. Anyway, keep up the good work.
Dan Paymar, Durango, CO

I am sympathetic to the plight of software companies—but the record industry has had the same problem for years, and records are still being produced.

If a software company can make a professional, high quality, usable product, people will buy it. The small-time software pirate only distributes the software most in demand. And the people who receive the pirated program are exposed to a quality product they probably would not have purchased anyway. I believe a good software company benefits more from this exposure than from advertising, in terms of additional sales. The jerk who copies a program, slaps his name on it, and sells it as his is another matter entirely.
Gary Lewis, Las Vegas, NV

Softalk Goes to School
We are proud owners of four Apple computers. We are not receiving our complimentary issues of Softtalk. Our computer classes will benefit from them. Will you please send them to my attention.
E. Schmitt, Mathematics Department, South High School, Torrance, CA

I currently send out a nonprofit education-oriented newsletter in the Rochester area and host a group of educators that meets once a month at my school.

I am requesting permission to quote articles from your magazine in the newsletter. They appear to be high quality and worth sharing with other teachers in the area.
John K. Elberfeld, Chairman, Science Department, Allendale Columbia School, Rochester, NY

Permission granted, with the proviso that Softalk *is a copyrighted magazine, so we will appreciate excerpts being of reasonable length and the author and issue properly credited. Thank you for the compliment.*

A Call for the Negative
Don't take this the wrong way, but I have noticed that all your software reviews are highly complimentary: they always wind up saying that the program in question is terrific, great, well worth the money, and so forth. Personally, I think it is just as important to point out lower-quality software as it is to choose only the programs that can be put on a pedestal.
Michael S. Lorenz, Collingswood, NJ

Ideally, we would look at all new software published each month, carry reviews of all the major contributions, and announce the rest. But we have a lot of catching up to do before we get there.

So far, we have only touched the tip of the iceberg of excellent, worthwhile software. Especially with limited space, we believed that Apples users would rather learn about products they might want to buy than chuckle over the wittiest criticism of something they might otherwise never consider.

What do the rest of our readers think?

The People's Choice
The top thirty bestsellers is an excellent idea. But how about a reader's top thirty poll also? I would like to know how that bestselling software stands up to a user evaluation.
Gary Lewis, Las Vegas, NV

Coming up, Mr. Lewis. Watch for your ballot for the Most Popular Programs Ever in the January 1981 issue of Softalk.

But don't overlook the possibility that the best popularity vote a product can get is the willingness of a shopper to buy it.

Moving Mountains
I just borrowed the October issue of *Softalk* from a friend and have the highest compliments for it! I enjoyed the magazine and especially liked "Apples and the Handicapped." I live in northeastern New Jersey and would like to volunteer any assistance I can give.
Craig Morris, Livingston, NJ

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U S S I O N

I am involved with selling computers in the Phoenix area. I am interested in locating any software being developed or available for the Apple having to do with dyslexia or any other learning disability. Any info will be appreciated.
Nancy Williams, MicroAge Computer Store, Phoenix, AZ

I am a consumer-parent of a retarded son, as well as parent of two gifted-talented ones, one of whom likes to program for pay after school.

As such, I am a member of the Governor's Council for the Handicapped and the Gifted in Alaska. Two of the twenty-three council members have Apples. We are just starting to get the council interested in computing as a resource for the handicapped.

I would appreciate extra copies of the October issue for distribution to the council. Also other articles that might get the council rolling.
Glenn K. Johnson, Fairbanks, AK

As a special education media specialist, my primary function is matching available means, materials, and equipment with learner needs. Recently this has involved the Apple as a CAI tool for special education students from learning disabled to trainable mentally retarded. We have not reached the point where we know what is needed.

I'm currently working on a proposal to establish a national micro clearinghouse for instructional software. As I envision this project, it would be a modified "bulletin board," accessible to anyone via micromodem. Upon calling up our computer, the client would have two choices—answer a questionnaire or ask for specific subject area. The end result would be a listing of appropriate titles, designed to meet the requested instructional objectives.

I would appreciate your ideas on this. If there is something like it going on somewhere, I'd like to know.
Doug Archer, Green Valley Area Education Agency 14, Creston, IA

Just a note to let you know that your concerns and efforts are noted, and that there is an ever-increasing focus of attention on this problem. First of all, I encourage you to get in contact with Dr. Paul Hazan, at the Applied Physics Lab, John Hopkins University, John Hopkins Road, Laurel, MD 20810. He has a grant from the National Science Foundation to conduct a national contest on software for individuals with handicaps. Since there will be competition in all sorts of classes and the award will be actual computer equipment among other things, you may be interested.

Here at Trace, we're doing very extensive work in the development of custom software for the Apple to meet various needs of disabled individuals. Our primary focus is in the area of communication and special writing systems. One of the programs is designed especially for individuals using essentially one hand or one finger to type; software that will get around the control and shift problems as well as providing abbreviation expansion and other techniques to accelerate user input. This same software package can and will later be extended to provide other input techniques that do not use the keyboard at all.

You may also be interested in a comparison report we did of the Apple versus the TRS-80 in rehabilitation applications. Prior to selecting a computer for our various efforts (we now have five Apple computers being used in various rehabilitation aid development programs), we did a comparison study of the two leading computer families (the Apples and the TRS-80s) to see which would be the superior computer overall for rehabilitation applications. The Apple, obviously, came out on top.

It may also be of interest that we are currently working with several DVR agencies and one Federal agency who have or are in the process of purchasing Apple-computer-based systems, ranging in cost from $3,000 to $12,000, for clients to use in vocational rehabilitation settings.
Gregg C. Vanderheiden, Director, Trace Center, Madison, WI

Softalk *continues to receive information of use to handicapped people from groups such as those represented by these letters. If you are handicapped or know someone who is and would like to investigate how a computer might help you, write to Softalk Assistance, 10432 Burbank Boulevard, North Hollywood, CA 91601.*

You can write to Trace Research and Development Center for the Severely Handicapped at 314 Waisman Center, 1500 Highland Avenue, Madison, WI 53706.

The American Association for the Advancement of Science, as part of a project supported by the National Science Foundation, is publishing Bulletins on Science and Technology for the Handicapped. For more information, write to the association at the Office of Opportunities in Science, 1515 Massachusetts Avenue, NW, Washington, DC 20005. ■

Christmas List...

1.
SARGON II (Spracklens) "This program represents a giant step forward in microcomputing Chess... an excellent program which will provide a true challenge for many players. ...Save your money and buy SARGON II..." *80 Software Critique. #03404, Apple II tape, $29.95; #03409, Apple II Disk, $34.95*

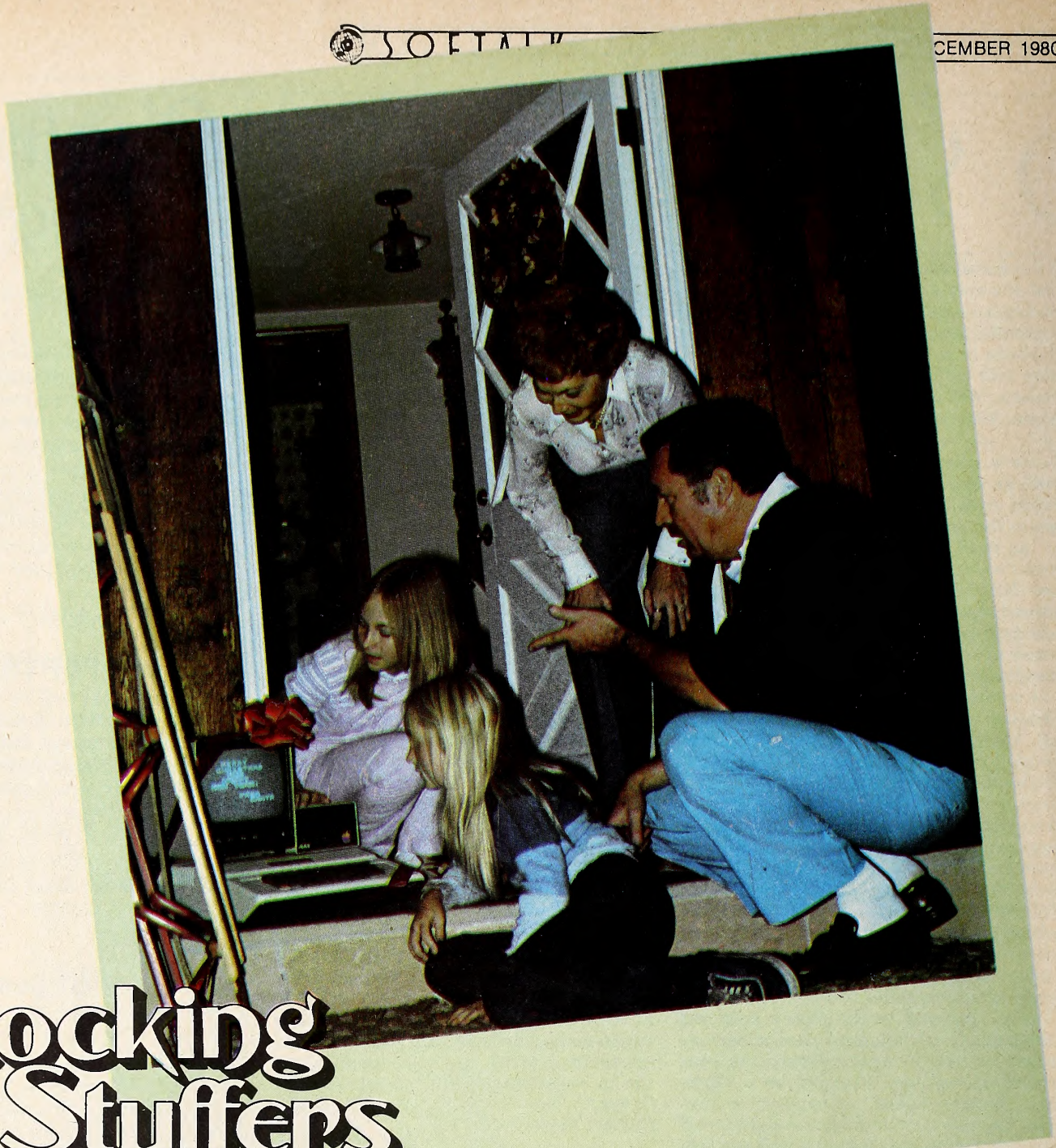
2.
New! **SuperFORTH** (Bugbee) An extended version of the FORTH language. Supports a high-level language that allows you to write programs that perform floating point mathematics as well as integer mathematics. Also features high-resolution graphics and optimized string handling capabilities. *#05509, Apple II Disk, $49.95*

3.
New! **ENERGY MISER** (SuperSoft Associates) A complete heating/cooling analysis program for your home or office that will calculate heat loss or gain due to poor insulation, leaky doors and windows, and more. *#05604, Apple II tape, $24.95. #05609, Apple II Disk, $29.95*

See the Stocking Stuffers on page 8 for more Christmas ideas!

...P.S. Go to your local computer store!

Hayden Book Company, Inc.
50 Essex Street
Rochelle Park, NJ 07662



Stocking Stuffers

A Holiday Gift Guide

Delightful as holiday shopping in a picturesque December snow can be, a little goes a long way. The Yellow Pages has a good idea, we believe, in letting your fingers run through the yellow rather than your wet feet through the white. But, for special interests, the phonebook adjunct isn't really detailed enough.

Therefore, we asked software publishers and hardware manufacturers of products for the Apple to send us short descriptions of products they think Apple owners might like for Christmas. *Softalk* has not tried all these products and leaves it to our readers to determine their applicability and worth for your gift-giving needs.

A few generalizations: where hi-res is not specified, assume graphics are lo-res or nonexistent; where memory size is not specified, assume you need 48K; where language is not specified, either Integer or Applesoft should work; where "disk" is specified, assume DOS 3.2 (3.3 with Basics disk will work); many cassette-only programs can be saved to disk, but not all, so check with your dealer; finally, if you cannot obtain a product from your dealer, and your dealer can't order it, try information in the city of the publisher or manufacturer to contact them, or call *Softalk*.

Good shopping and have a very happy holiday!

UTILITIES

Apple Computer, Cupertino, CA

☐ Apple's *DOS Tool Kit* helps you develop Applesoft and 6502 assembly language programs. Included are an assembler and source editor, plus a renumber, merge, and REM delete pro-

gram for Applesoft programs. Also has 2 hi-res graphics programs: *Animatrix*, to create and edit hi-res character sets, and *Hi-Res Character Generator*, to display characters on the hi-res screen. Applesoft, DOS 3.3. $75.

☐ Programmers, engineers, scientists: *Apple Fortran*, the ANSI 77 Standard Subset, now lets you use your Apple system to develop new Fortran programs and modify existing ones. It operates in the Apple Language System, which provides a complete software development environment. Apple Language Card. $200.

☐ *Apple Pascal* incorporates the UCSD Pascal Operating System, Version 2.1, with enhancements for color graphics, sound generation, and Apple's I/O features. Pascal system offers a compiled language, which allows programs to execute more quickly and use less space than Basic. Comes with Apple Language System. Disk. $495.

CJM Industries, Reston, VA.

☐ *Graphics Kit Software.* Uses Microstiks to simulate graphics pad. Draws shapes in 8 modes, to both hi-res screens; assembles shapes into tables; palette color selection using Microstik cursor; adds 2-directional auto-scrolling text to drawings; moves, rotates shapes easily; Animate Control cuts between screens. 50 drawing commands. 48K, Integer Basic, Microstik, disk. $49.95.

☐ *CJM Graphics Kit Special.* All the power of a sophisticated graphics tablet. Includes Microstik with 16-pin DIP, ready to plug into game I/O socket; graphics kit software; and a comprehensive manual on Apple hi-res graphics. 48K. $109.95.

Cook Laboratories, Norwalk, CT

☐ *Model PK-80 Peak Reading Voltmeter.* For cassette loading ease, Peek 80 lets you set and monitor the best loading level and erect precise azimuth. Included are shelf life battery, azimuth calibration tape, adjustment tool, patch cord, and user's manual. $49.50.

Dakin5, Denver, CO

☐ *Programming Aids 3.3* comprises 12 utilities for DOS 3.3. Display or print variables, lines referenced by GOTO, GOSUB; update of any sector; powerful data entry subroutine that handles both string and numeric data; compress code, copy; and much more. 48K, Applesoft, DOS 3.3, 2 disk drives, printer. $90.

FSI, Reseda, CA

☐ *A Diskette Drive Head Cleaning Kit* makes a good gift for practical owners of Apples and others using diskettes—either 5¼" or 8". The *FD-08* kit contains cleaning diskettes and solution that will service read/write heads in 20 seconds. For both single or dual-sided drives. Removes harmful contamination build-up, and provides cleaning capability for 1 drive for up to 1 year. About $30.

☐ *New! Diskette Protectors by Verbatim.* Rugged, handsome smoky-clear plastic swing-lid file boxes, for 8" or 5¼" disks. Each holds 50, protecting your data from dust, scratches, and misplacing. *The Protector*: for 8", $39.95; for 5¼", $29.95.

Howard Software Services, Los Angeles, CA

☐ *Program Controller* is a utility package for convenient control of program running and listing. Includes keyboard and paddle control of speed, keyboard control of listing format, rapid cursor control, real-time control of line printer, and easy display of memory pointers. Compatible with all programming languages. $39.

Charles Mann & Associates, Yucca Valley, CA

☐ *The Basic Teacher* teaches Integer Basic programming to the novice in 12 lessons with sample tests and review sections. Learner writes sample programs with help of a general index. A bonus program, *Apple Tricks*, teaches peeks, pokes, and calls. 16K, Integer Basic. Cassette, $29.95; disk, $34.95.

☐ *The Teacher Plus* teaches Applesoft in 18 lessons on 2 disks, including sound and graphics. Conversational approach uses Apple reference manuals as supplements. ROM Applesoft. Cassette, $34.95; disk, $39.95.

☐ *The Floating Point Dictionary* helps the programming student learn Applesoft and is indispensable as a permanent reference. Working examples of statements are formed on the screen. Practice test programs show learners the results of commands they use. HELP command provides the correct command to look up. Applesoft, disk. $29.95.

Micro-Ware Distributing, Pompton Plains, NJ

☐ *Uncopy.* A unique way to make Apple disks uncopyable. Just load in the software that you want protected and init a disk with uncopy. That's it. Applesoft (not for Pascal systems). $29.95.

☐ *The Ultimate Transfer.* Upload or download programs to distant areas over the phone in any language—Integer, Applesoft, machine language. 48K, Micromodem. $25.

On-Line Systems, Coarsegold, CA

☐ *Paddle-Graphics.* A serious graphic development system for the business or entertainment software developer. Permits writing hi-res text directly from the keyboard in any size, direction, or color. Shape tables are constructed in minutes. Gives your Apple 21-color capabilities. 48K, ROM Applesoft. $39.95.

☐ *Tablet-Graphics.* The same software as *Paddle-Graphics* made available for use with Apple's graphics tablet. For very serious graphics development. 48K, ROM Applesoft. $49.95.

Powersoft, Pitman, NJ

☐ *Shape Table Generator System.* 2 parts: Hi-Res Shape Table Generator creates shape tables as you draw shape on screen. Hi-Res Table Converter converts these shape tables to be used by Applesoft. Applesoft, disk. $19.95.

☐ *Disk Access Supervisor.* User directly manipulates information stored on disk. Program provides maximum flexibility in control over DOS. Applesoft, cassette or disk. $24.95.

Progressive Software, Plymouth Meeting, PA

☐ *VU#3.* A utility to use with *VisiCalc*, *VU#3* will turn any Basic text file into a *VisiCalc* file, and vice versa. 32K, Applesoft, disk. $74.90.

Programma, Burbank, CA

☐ *Power Editor II.* Versatile and powerful utility tool performs functions that include editing of Integer Basic and Applesoft programs and special formatting of lines for clear listing of programs. More than 40 commands, including speed and string search commands. It simulates autostart ROM and creates keyboard macros. $49.95.

☐ *Electric Template.* Valuable, necessary drafting aid for technical drawings; quick entry and editing of graphics information to hi-res screen. Also, calls up sequence of template shapes, either predefined or operator generated. English and Greek alphanumeric characters may be entered in any direction, including upside down. $49.95.

Quality Software, Reseda, CA

☐ *Linker* by Don Worth. Turn your Apple into a powerful and productive software development machine with this superb linking loader/editor package. *Linker* dynamically loads and relocates machine language programs anywhere in RAM. Includes library of useful subroutines that can be combined with user's programs. Works with virtually any assembler for the Apple. 32K, disk. $49.95; manual only, $19.95.

Rainbow Computing, Northridge, CA

☐ *Filemaster II* by David Mullich: a general purpose information retrieval system that allows a powerful data base of your own design. Uses a linked-list structure for fast, reliable searching on any size file. Allows for tallying, totaling, advanced math routines, powerful print formatting. Up to 15 fields, 255 characters each per record. Compatible with *Datacope Single Disk Sort* for sorting. 48K, ROM Applesoft, disk. $99.50.

☐ *Memory Verify.* A diagnostic routine that checks a given range of memory, indicating any addresses found to be faulty, as well as the data that was placed in the memory cell, and the faulty data readback. Cassette, 16K, $5; disk, 32K, $10.

Stocking Stuffers

Softape, North Hollywood, CA

☐ *Screen. Machine.* Get ready to explore the world of programmable characters. *Screen Machine* lets you create new character sets. You can redefine any keyboard character. Just create any symbol using a few simple keystrokes and the *Screen Machine* will assign any shape to any key. 48K. Cassette, $19.95; disk, $29.95.

Southwestern Data Systems, Santee, CA

☐ *Roger's Easel.* A great buy for making up programs for the kids in a minimum of time! Lets you put up to 30 lo-res images in a program with virtually no actual programming. Disk. $16.95.

☐ *Apple-Doc.* Make life a little easier for your favorite programmer! The number one program for listing variables, GOSUBs; also a powerful global/local search and replace editor—super easy! SDS bestseller. Disk. $24.95.

☐ *Programmers Utility Pack.* The most often used utilities plus some special extras. Integer and Applesoft. Renumber, append, line find (locates actual program data in memory), and more. Includes discussion of internal operation of the Apple and how to recover "garbaged" programs. Disk. $16.95.

☐ *SDS Vinyl Diskette Pages.* Safely store 2 diskettes per page in any 3-ring binder; specially manufactured by SDS in a high transparency vinyl. Set of ten, $7.95.

SubLogic, Savoy, IL

☐ With *3-D Animation* package, you can generate drawings, view them from any distance or angle, and rotate them. Projection rate is 100 to 150 lines per second. Dual-page flicker-free animation, easy to use with Basic programs. 16K. Cassette, $45; disk, $55.

Synergistic Software, Bellevue, WA

☐ *Higher Text.* Add colorful customized text to your hi-res graphics displays. Use the 6 character sets provided or define your own set with normal or double-sized characters. All the features of a normal text screen plus 10 colors and lower case with no hardware modifications are provided. 32K, disk. $35.

☐ *Higher Graphics II.* Improved version performs the hi-res graphics screen creation functions of hardware graphics devices. In addition, this program allows you to create and edit shapes and shape tables for use in screens of animation. Produce games, business and educational displays of stunning detail and color easily. 48K, disk. $35.

☐ *Directory Manager.* Turn your disk catalog into a menu. Perform dozens of disk operations with just 2 keystrokes. Lock, Unlock, Load, Save, Delete, *Un-Delete,* etc., any file. Transfer files to other disks, sort or rearrange your catalog, or use flashing, inverse, or lower case characters in file names. Fast and easy. 48K, disk. $30.

☐ *Program Line Editor.* This powerful program editor and programmer's aid allows fast and easy modification of program lines without retyping the line. With a few keystrokes, insert, delete, or replace parts of a line. Invoke any sequence of commonly used commands by pressing 2 keys. Program development and modification done infinitely faster than before. 32K, disk. $40.

United Software of America, New York, NY

☐ *AppleWorld.* Create 3-D color images and project them in true perspective on the Apple screen. Rotate them, move them closer or farther away, and more. 48K, disk. $59.95.

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REFERENCES

Hayden Book Co., Rochelle Park, NJ

☐ *Home Computers Can Make You Rich* by Joe Weisbecker. A text every home computer owner and nonowner will want to find in their stockings. Discusses the basic principles of making money, freelance writing, programming, inventing, consulting, and much more. 5117-8, paper, $6.50.

☐ *What To Do After You Hit Return* by The People's Computer Company. A potpourri of games and creative activities, this is a fun book. Jam-packed with quips, illustrations, and cartoons, the book offers puzzles, brain-teasers, math concept games, graphics, and games for the 21st century. 5476-9, paper, $14.95.

☐ *A Consumer's Guide to Personal Computing and Microcomputers,* Second Edition, by Stephen Freiberger and Paul Chew. An updated edition of text chosen by *Library Journal* as one of 100 outstanding sci-tech books of 1978. Updates prices, latest developments in microcomputer technology, and reviews more than 100 microcomputer products from more than 60 manufacturers. 5116-X, paper, $8.95.

☐ *The First Book of Microcomputers: The Home Computer Owner's Best Friend* by Robert Moody. Stuff a stocking with this valuable text that explores what personal computers are and what you can do with them. Details the many uses of your home computer such as home protection, game playing, inventory management, tax calculation, and keeping track of budgets and bills. 5121-2, paper, $5.95.

Sterling Swift Publishing Company, Manchaca, TX

☐ *Microcomputer Systems and Apple Basic*, by James Poirot, is a more gradual introduction to programming in Applesoft than in the Apple manuals, especially for teachers and students. Includes brief history of computers and of development of microcomputers. Paper. $8.95.

☐ *Computers and Education*, by James Poirot, should be of interest to anyone involved in education. Outlines very specifically the major areas of interest for micros in the educational process. Paper. $6.95.

☐ *Computer Literacy Show and Tell Kit* is a collection of computer components to enable learners to understand and visualize the miniaturization and cost reduction capabilities of computer hardware. Includes abacus, punched cards, disks,

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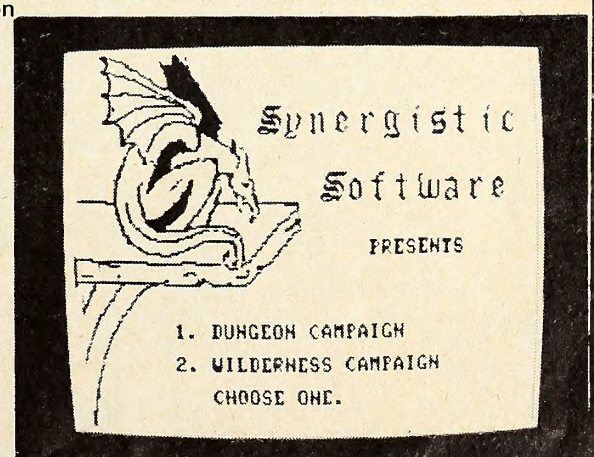

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Sybex, Berkeley, CA

☐ *Programming the 6502*, by Rodnay Zaks, teaches assembly language for computers with 6502 microprocessors. A step-by-step course complete with exercises, the book enables the reader to write complete applications programs. 1st of 3-volume series. Paper. $12.95.

☐ *6502 Applications Book*, by Rodnay Zaks, follows *Programming the 6502* in 3-volume series. Presents real-life application techniques. Teaches how to connect computer to outside world and implement practical applications, from home alarm system to industrial uses. Paper. $12.95.

☐ *6502 Games*, by Rodnay Zaks, concludes the 6502 series. An educational text on advanced programming techniques, book uses 10 common game examples. Covers effective algorithm design, data structure design, and coding techniques. Paper. $12.95.

☐ *Inside Basic Games*, by Richard Mateosian, explains how to design games programs in Integer Basic. From educational games to games of chance, each is described and analyzed for playing as well as for learning to write programs. Paper. $13.95.

☐ *Fifty Basic Exercises*, by J. P. LaMotier, teaches Integer Basic through actual practice. Each exercise is explained fully and accompanied by flow charts and program listings. Applications include mathematics, business, physics, and games. Paper. $12.95.

☐ *Introduction to Pascal*, by Rodnay Zaks, a step-by-step guide to Pascal, requires no prior computer programming experience. Teaches language quickly and completely. Describes Pascal and UCSD Pascal. Paper. $12.95.

☐ *The Pascal Handbook*, by Jacques Tiberghien, is a complete reference guide to Pascal. In dictionary format, book contains every Pascal instruction, function, operator, and reserved word, including syntax, definition, and examples. Paper. $14.95.

EDUCATION

Apple Computer, Cupertino, CA

☐ Did you know that Einstein was not the discoverer of relativity? The friendly professor of the *Shell Games* knew it, and knows much, much more. These programs provide facts and information in entertaining quiz form. Editor program allows teachers and parents to add quizzes on special subjects. Integer Basic, DOS 3.2 or 3.3 with Basics disk. $30.

☐ *Elementary, My Dear Apple.* 4 educational programs help children 12 and older sharpen spelling, math, and problem-solving skills. In *Lemonade*, kids run lemonade stands, developing math ability and business sense. *Darts, Supermath,* and *Don't Fall* help kids understand fractions, basic arithmetic, and spelling. Integer Basic and Applesoft, DOS 3.3. $30.

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Brain Box, New York, NY

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Edu-Ware Services, Canoga Park, CA

☐ *Compu-Math: Fractions.* Reviews and teaches the basic skills of fractions: fractional parts, common denominators, addition, subtraction, multiplication, division. 32K, Applesoft, disk. $39.95.

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☐ *Compu-Read.* Tired of fighting the paper jungle? 4 independent programs and 2 file builders help you increase speed and retention. You set initial difficulty level; computer matches itself to your performance. Character recognition, high-speed word recognition, synonyms and antonyms, sentence comprehension. 48K, Applesoft, disk. $24.95.

Information Unlimited Software, Berkeley, CA

☐ *TellStar.* Kids and adults can locate, identify, and obtain information on stellar objects in hi-res. Accurately adjusts for latitude and longitude, viewing time and date. 48K, ROM Applesoft, disk. $39.95. Advanced version with multiple star tables, $79.95.

Charles Mann & Associates, Yucca Valley, CA

☐ *Programmed Exercise.* Shows various exercises in animated lo-res. Directions for exercise are given on monitor along with graphics. Sample speeds suggest best exercise speed. Program allows for warmup and cool off. Integer Basic. $19.95.

Microsoft, Bellevue, WA

☐ Microsoft *Typing Tutor* is an excellent way to learn to type or build typing speed. It uses short exercises and longer paragraph drills to teach keys and drill on problem areas. Immediate feedback on speed, errors, weak keys and percent accuracy is provided after each drill. Proprietary TRM—Time Response Monitoring—software monitors the keyboard 20 times per second. 16K. $14.95.

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Powersoft, Pitman, NJ

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Progressive Software, Plymouth Meeting, PA

☐ *Matching Patterns* is a learning program for children. Choose among many skill levels. Program draws several patterns on screen; child finds 2 that match. Patterns vary from simple to complex within each level. 32K, Integer Basic, disk. $20.50.

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GOTO 22

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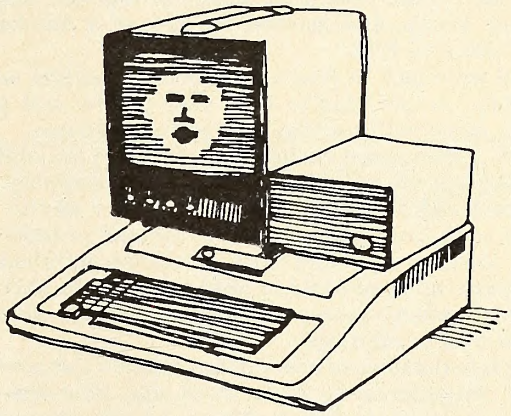

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Assembly Lines

BY ROGER WAGNER

Everyone's Guide to Machine Language, Part 3

Welcome back! Last month we looked at how the Apple's Mini-Assembler works, and learned the first of a number of mnemonics: JSR and RTS.

This month we'll look at how assemblers in general work, learn a few new mnemonics to feed your Apple, and poke around a little more with various addressing schemes.

Assemblers. I mentioned earlier that the basic principle of the Apple is its ability to scan through a range of memory and execute different operations depending on what numeric values it finds at each location, or *address*. Instead of tediously loading each location by hand with mundane numbers to create a program, an assembler is used to translate abbreviated codewords, called *mnemonics*, into the proper number values to be stored in memory.

In jumping into the topic of assemblers, there's also a whole new section of computerese to learn. To do this, let's dissect a sample assembly language listing. This example assumes an assembler similar to the one mentioned in an earlier issue. That assembler is originally by Randy Wigginton and is available in many Apple user group libraries. If you have a different assembler, you may have to consult your manual for the differences, if any, between this assembler and your own.

The listing on the left is what is generally called the *source code*. This is the program coded using mnemonics and various names or *labels* for different parts of your routine. Very few actual addresses or values are used in the source code. To the right is the *object code*. This is what is actually put in memory as the machine language program.

The object code is what the computer actually executes; it is obviously rather difficult to understand, at least compared to trying to understand it when you have the advantage of the source code. This great difference in being able to understand the program is where the importance of having the source listing for a given program comes in. This is why your reference manual contains a source listing for the Apple Monitor. This used to be considered a must in documenting a system when the Apple came out.

Source listings for Applesoft, Integer, the disk operating system (DOS) are much harder to come by and are generally regarded as proprietary information by Apple.

Initially, let's consider just the source listing.

```
 1  ******************
 2  *SAMPLE PROGRAM*
 3  ******************
 4  *
 5  *
 6  OBJ EQU $300
 7  ORG EQU $300
 8  BELL EQU $FBDD
 9  *
10  START JSR BELL ;RING BELL  300— 20 DD FB
11  END     RTS    ;RETURN     303— 60
```

The first thing to notice is that, just like in Basic, we again have line numbers. This time, though, the line numbers are solely for the use of the editor, and are not used at all to reference routines. Inserting a line is done with a special editor command, and all others following are automatically renumbered to accommodate the new line.

Next is the syntax, or proper format of the information on each line. Generally there are three basic elements, or *fields*, to each line as it is entered. These fields are either defined by their position on the line or, more often, by *delimiters*. A delimiter is some character which is used to separate one field from another. In this assembler, a space is used. This way, you don't have to tab over to some specific position for each field on the line. Instead you just make sure each field is separated from the adjacent one by a space.

The first field is for a label, and is optional. Lines 10 and 11, for example, each have a label that applies to that point in the routine. In this case, START is where we first begin the program, and END is the clever label used for the finish. You may even recognize this program as being the one in the last issue that beeped the speaker. Some assemblers limit you to the number of characters in the label. In addition, you usually can use the same characters as would form an opcode, for example, RTS, as the label.

As the program becomes more complex, we can do the equivalents of GOTOs and GOSUBs by using these labels instead of a line number. You'll notice that to do this, BELL has to be defined somewhere in the listing. Since BELL did not occur as a label within our own program (lines 10 and 11), it was defined at the beginning using the EQU statement. This can be thought of as reading, "BELL EQUals $FBDD." This way, whenever we use the label BELL, the assembler will automatically set up the JSR or whatever to the address $FBDD.

The second field is the *instruction field*, which includes the opcode, or mnemonic, and its associated operand. In line 10, the JSR was the opcode and the operand was BELL. Not all opcodes will have an operand.

The third field, to the right, is the *comment field*, which is also optional and is reserved for any comments about the listing you might wish to make. The semicolon in the source code is used as the delimiter for the comments field. Comments can also be done at the very beginning of the line by using an asterisk as the REMark character. As in Basic, everything after the asterisk is ignored by the assembler.

Assemblers also have what are sometimes called pseudo opcodes, such as the EQU we mentioned earlier. Although these do not translate into 6502 code, they are understood by the assembler to mean certain things while assembling the object code.

An example of one of these is found on lines 6 and 7 of the source listing. OBJ stands for OBJect and defines where the object code will be assembled in memory. In this case, the code will be assembled starting at the address $300.

ORG stands for ORiGin and defines the base address to be used when calculating the JSRs and other functions within the program. Generally OBJ and ORG are the same, and for the time being we'll leave them that way for simplicity. We'll go into the ORG statement in a later installment and discuss why one would want it to be different than the OBJ address.

Remember, only the actual program is converted into the object code. The remarks and EQU, OBJ, ORG, statements are only used in the source code and are never transferred to the object code.

Load/Store Opcodes. One of the most fundamental operations in machine code is transferring the number values between different locations within the computer. You'll recall that in addition to the 64K of actual memory locations, there were an additional three registers inside the 6502 itself. These were the Accumulator and the X and Y registers. There are a number of opcodes that will load each of these registers with a

THE GROUP'S APPROACH

The Personal Computer Technical Analysis Group is now opening its membership both to individuals and firms. Group members can now use their own relatively inexpensive APPLE* micro-computer to help them trade more effectively. The "Technical Analysis Group" was formed, as a cooperative, by traders who wished to apply computer techniques to the analysis and trading of commodities. The Group is now engaged in an ongoing project to supply its members with additional software programs.

Security technical analysis and data management, with your own personal computer and graphic printer, is not a way of sidestepping hard work. It is a way of making it more productive. There is no virtue in spending hours charting, plotting, and calculating by hand when the Group has designed programs for the APPLE* computer which will allow you to do these time consuming jobs quickly. No computer experience is necessary. The time you save can now be spent creating, testing, and perfecting your own trading system from our "library" of programs.

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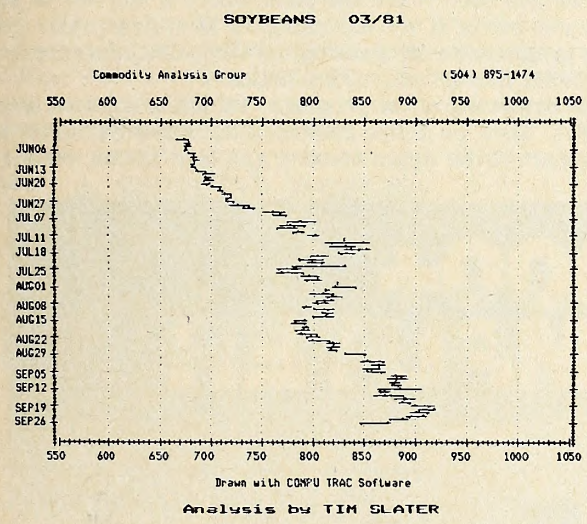

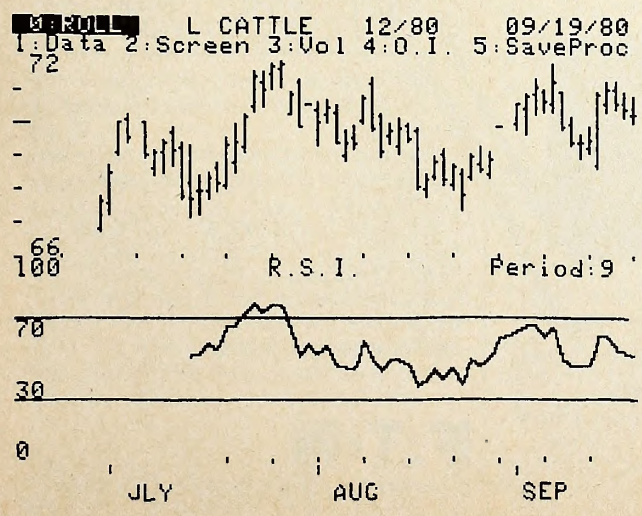

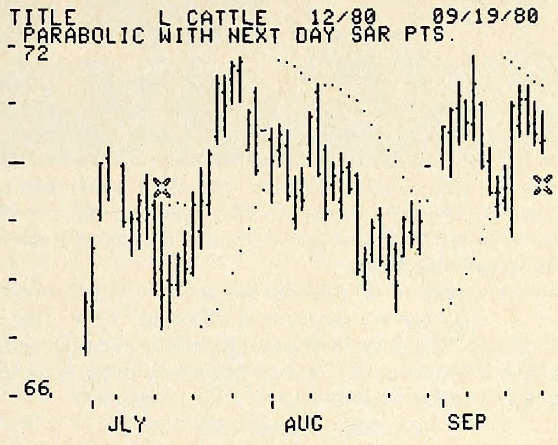

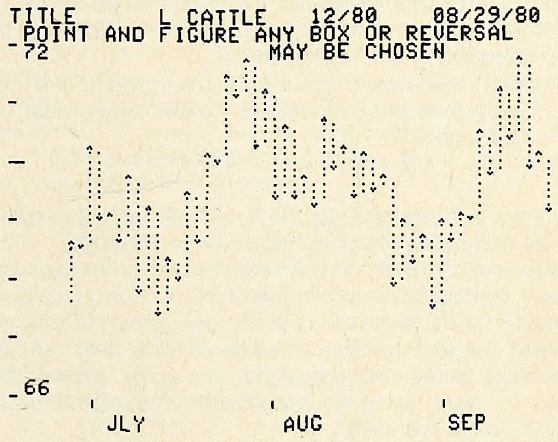

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particular value, and, of course, another set to store these values somewhere in the computer. The table below summarizes these:

	Accumulator	X-Register	Y-Register
to load:	LDA	LDX	LDY
to store:	STA	STX	STY

In the case of the first entry, LDA, this mnemonic stands for LoaD Accumulator. This is used whenever you wish to put a value into the accumulator. Conversely, to store that value somewhere, you would execute the STA command, which stands for STore Accumulator. The opcodes for the X and Y registers are similar and perform the identical function with the associated registers.

Now the question is, how do we control what numbers get put into the register we're concerned with? There are basically two options. The first is to put a specific number there. This is usually indicated in the source listing by preceding the number we want to be loaded with a "#" character.

```
 99          LDA #$05    ;LOAD ACC. WITH THE
100                     ;VALUE '$05'.
```

For instance, in this example, we have loaded the accumulator with the value 5. How do you think we would load the X or the Y register with the value 0?

The other alternative is to load the register with the *contents* of another memory location. To do this, we just leave off the "#" character.

```
 99          LDA $05     ;LOAD ACC. WITH THE
100                     ;CONTENTS OF LOC. $05
```

In this case, we are loading the accumulator with whatever location $05 happens to be holding at the moment.

These two options are referred to as *addressing modes.* In these examples, we have considered two. The first is called the *immediate* mode, because it is not necessary to go to a memory location to get the desired value. The second case is called the *absolute* mode. In this mode, we put a given value in a register by first going to a specified memory location that holds the value we want.

Putting It All Together. We now have the ability to transfer numbers about in the computer, to jump to other subroutines within the Apple via a JSR, and to return safely to the normal world via an RTS when we're done. In addition, we have an assembler that will allow us easily to generate a source listing for our program, which can also be easily modified.

Let's put all this together to write a short program to print some characters on the screen. The newest Apple Reference Manual (1979 edition) contains two charts (pages 15 and 16) that will supply the necessary information to achieve this.

When a character is printed on the screen, what is really happening is that a number value is being stored in the area of memory reserved for the screen display. Change a value there and a character on the screen will change. The chart on page 16 gives the various addresses of each position on the screen. The upper left corner corresponds to location $400, the lower right to $7F6.

On page 15 is a chart showing which number values create which screen characters. Suppose we want to print the word *APPLE* in normal text. The chart indicates that we should use the following values:

A — $C1
P — $D0
P — $D0
L — $CC
E — $C5

If we want the word to appear on the 7th line of the screen, we should load these values into locations $700 to $704. To test this, enter the following program using your assembler. If you still don't have one, the Apple Mini-Assembler can still be used, although we will soon reach the point where it will not be sufficient for our needs. If you are using the Mini-Assembler, enter only the program itself, ignoring the OBJ, ORG comments. In place of JSR HOME enter JSR $FC58.

At the beginning of the program, we define where it is to be assembled. Then we define routine in the Apple called HOME, which is part of the Apple Monitor and is at $FC58. Whenever

JSR 22

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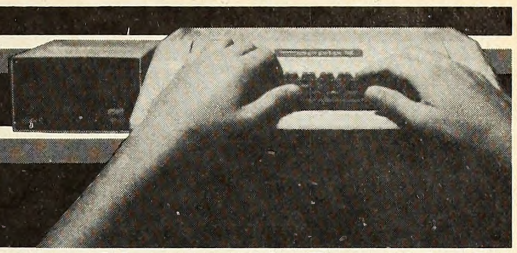

☐ **Quality Software** (Reseda, CA) has acquired exclusive distribution rights for products of the **Software Factory** (Newhall, CA). Principals of the Software Factory, **Don Worth, Frank Wood,** and **Bob Male,** will spend the gained time developing software products. The acquisition adds four new programs to Quality's line: *Linker, Astroapple, Babble,* and the ever popular *Beneath Apple Manor.*

☐ The corporation that was D. C. Hayes Associates, Inc., has changed its name to **Hayes Microcomputer Products Inc.,** according to vice-president **Glenn Sirkis.** Hayes, by either name, is headquartered in Norcross, Georgia.

☐ **Dan Paymar** and his company, **Enhanceware,** have moved to 91 Pioneer Place, Durango, CO 81301. Paymar notes that the motherboard for which his new lower case adapter (LCA-2) was designed is the revision 7 Apple CPU board; check on this if you had any doubts about whether yours was a new or old board. Putting an old adapter in a new Apple will cause no harm; the symptom is partial characters with vertical lines on the screen. But putting a new adapter in an old Apple will destroy the adapter, so be sure you know what's who, and so on.

☐ **Robert Delf** of **Columbia Computing Services** announces that company's move from Seattle to 8611 South 212th Street, Kent, Washington 98031. New phone is 206-872-0283.

☐ Also on the move: **Lobo Drives International** has moved to 354 East Fairview, Goleta, CA 93011. New phone is 805-683-1576. **Programma** has moved to 2908 North Naomi Street, Burbank, CA 91504; telephone, 213-954-0240.

☐ In researching successful companies for Exec articles, *Softalk* has run into many that started in the founder's apartment or garage. Such is the youth and open nature of this industry that doing business from these spots is no disadvantage, at least in the marketplace. But, no doubt, it isn't as convenient for the staff as office space.

So it's with congratulations that we recognize a company just now making that giant step—from apartment to honest-to-god office: **Edu-Ware Services** announces its new offices at 22222 Sherman Way, Suite 102, Canoga Park, California 91303. Their phone number remains the same.

☐ **Mike Cornblith,** manager of regional service for **Apple's** Charlotte, North Carolina, distribution and support center, is willing to speak to east coast user's groups about the Apple. If anyone should know Apples, it's Mike. Before being transferred to the managerial position in the new Apple center, Cornblith spent several years as supervisor of repair for Apple at the Sunnyvale, California, facility, a stone's throw from headquarters.

☐ **California Computer Systems** (Sunnyvale, CA) has named **Donald L. Sink** to the post of vice-president of marketing. Sink will be responsible for worldwide marketing, sales, and service of CCS products; he'll report directly to CCS president, **Dan Burgoon.**

A fifteen-year veteran of the computer industry, Sink most recently served as marketing operations manager for systems and components for Zilog, Inc. ■

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BY BILL BASHAM

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guage had made possible a new creative hobby, the seeds of potential art.

These computer portrait exhibits served a further, unstated, public purpose: to demonstrate that computers were servants, not masters, and, above all, a medium capable of personal expression, not impersonal homogenization.

It was only a matter of time, after this realization had settled in, that the gadget down at the shopping mall became what it is now—an increasingly common tool in home and business life. The mushrooming demand for the Apple is evidence of that; the rising popularity of computer portrait systems for the Apple is evidence that users, once upon a time those dazzled shoppers, are eager to enlarge the capabilities of their personal computer; and they're no longer satisfied with being the sitter, but choose to be the photographer.

A model system of this kind is the one offered by The Micro Works. Situated in the gentle, rural hillocks that slope to the Pacific north of San Diego, the company has been quietly going about the task of designing a total video digitizing system, with applications as seemingly broad as the user's imagination.

The system has nearly as many elements as the various symbols that make up a digital portrait. At its heart is the DS-65 digisector board, which is slot-independent in the Apple. A set of two monitors is recommended by Bob Lantz, president of The Micro Works, to allow the user to see both the keyboarded data and the picture from the camera. The printer, as well as the camera, must have Apple hi-res screen dump capability, with, of course, the Apple interface board.

An Eye for the Apple

BY ROBERT KOEHLER

They were introduced some years ago to an awed public, usually in enormous shopping malls where large crowds could gather to watch what seemed to be digital miracles. Someone in that crowd sat down before a video camera, not to be seen on television, but for a portrait sitting.

The photographer manned a computer keyboard, not the camera. The operator shot the picture by typing an instruction. The subject smiled; that smile, the subject, the entire camera image, materialized on paper out of a digital printer. The picture was developed.

Perhaps an acute observer in that crowd noticed that what made up the elements of the portrait were something entirely different from the grains of a photograph or film image or the benday dots of a newspaper photo: instead, symbols, dashes, obscure markings, numbers were seen, all easily distinguished by the white space separating them.

A New Art. The first impression was that of a superb illusory trick, where the stuff of data read-outs had been transformed into a new kind of photograph. But the deeper, second impression was that mathematics and computer lan-

In a Dither. The image-making process is achieved through "dithering," a word coined by Bell Labs many years ago to identify the video-to-digital process. In the case of the Micro Works system, there are five types of dithering: summation, straight comparison, and ordered dither in three matrices, two-by-two, four-by-four, or eight-by-eight.

The degree of dithering work going on can be visually detected in the levels of grey scale in the screen or print-out image. The straight comparison process, which, according to main programmer Andrew Phelps, has hardly any dithering at all, and the eight-by-eight matrix are polar opposites in resolution and grey scale. Where straight

comparison is strictly hi-res and high contrast, the eight-by-eight gives sixty-four levels of grey scale and, thus, a more photographiclike image that is the most desirable for print-out.

"We tried," Lantz explains, "to cover a large spectrum of visual quality so that users can select the resolution level best suited for their purposes. Controlling brightness and contrast from the board and the monitor is important, as is the choice of matrix scale. But speed is also crucial."

What Lantz means by "speed" refers to the system's scanning capability: a vertical white line that scans the video image, in essence, putting it to memory. Here, too, there is a choice of scanning speeds—one second up to eight seconds. The photographic metaphor here is shutter speed; if the subject moves during the scan, the resultant image via digisector can be strangely abstracted, with the whole movement recorded, just as long shutter speed set for a subject in rapid motion creates a blur on the final picture. The faster speed of scan minimizes this "problem" (for the video experimenter, this can be an asset, rather than a problem, if his creative language is abstraction), though, as it takes in only a four-dot pixel, it cannot provide the resolution that the eight-second scan fully exploits from the present generation of the digisector.

Lantz hints at a future generation of the board when the Apple III appears on the market. "If the screen has the higher resolution the reputation preceding it suggests, some alteration of the present board will certainly be necessary. Who knows? It may even approach or match the grey scale resolution that's now available only on print-out."

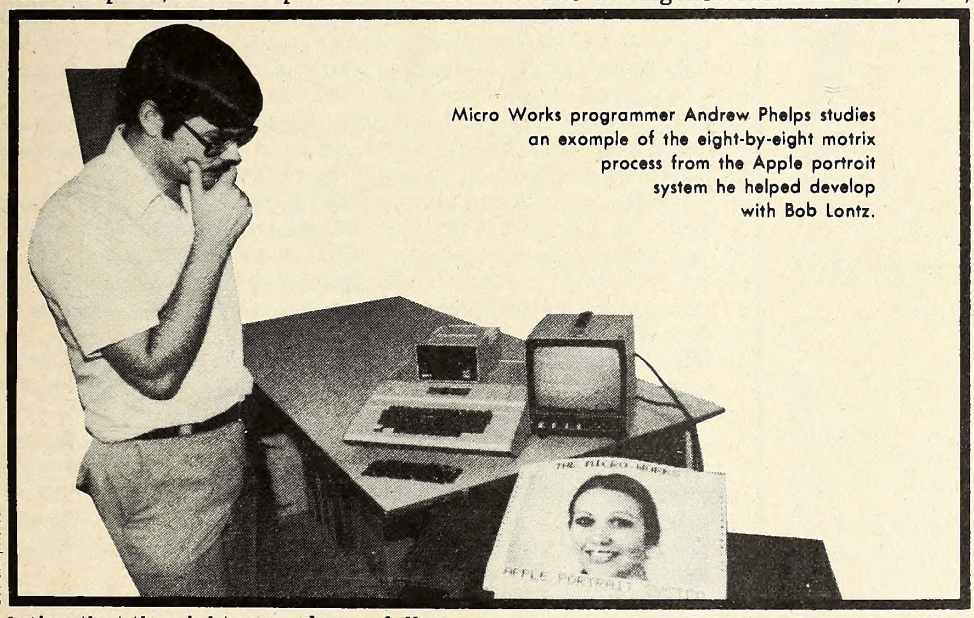
Apple Recognizes Objects. The software for the system possesses an extensive range of tasks besides the portraiture feature. Perhaps the most exciting of these is Artificial Intelligence, a program developed by Phelps. To demonstrate what A.I. can do, Lantz pointed the camera at five different objects, a door, a table, a television, a stack of boxes, and shelves, while Phelps processed each image in a one-second scan, identifying each with a title.

"The fundamental difference between this A.I. program and others before it," states Phelps, "is that, instead of discriminating between areas of light intensity the computer has stored in memory, it looks at shapes in a three-by-three binary image and then discriminates among those shapes. Since there are usually greater contrasts among shapes in a selection of images than in their light intensity—especially if these images are indoors, where light is more even and regulated—the shape discrimination process is comparatively more exact."

After the five images went to memory, the camera was directed back at the shelves—reviewing the shape on screen—and, sure enough, the monitor flashed up: "I See Shelves." Then, a list of exactitude in percentage was given, revealing that the Apple, in selecting out the shapes, had given the lowest percentage of difference between shapes in the original view and the second view to the shelves image.

The intelligence factor in A.I., then, isn't quite that of the intellectual variety. As Phelps says, "Artificial intelligence isn't when you're doing something particularly right, but when you do it slightly more right than wrong enough times so that it adds up to intelligence."

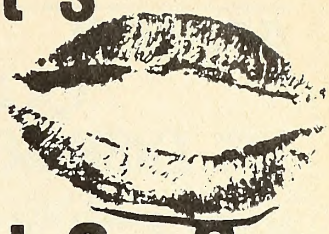
Artistic Eyes. The Apple, indeed, does have eyes—artistic ones, discerning ones, even spying ones. Micro Works' smart burglar alarm program may not capture the thief for you, but it will capture his image through dithering, and compare it with the digitized image of the same scene before the villain's intrusion. He won't know it, but he was the victim of an Apple growing smarter, and faster, than anyone in that shopping mall of yore could have realized. ■



Micro Works programmer Andrew Phelps studies an exomple of the eight-by-eight motrix process from the Apple portroit system he helped develop with Bob Lontz.

Softalk photos

Let's



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DEALER INQUIRIES INVITED

MARKETA Review

Cyber Strike. By Nasir. You have ten thousand units of energy. Before you can refuel at a base, you must rid that base of clone attackers. If you succeed, you can refuel and go on to the next of your five bases. To reach each requires a trip through hyperspace—five thousand energy units worth of flying.

Hang on to your space helmet—here you go! Stars that seemed to be easily wafting toward you as you cruised through home space turn into streaks of bright light; the sound is incredible; it seems as though the whole universe is coming toward you in a moving blast of three-dimensional light.

At last it subsides. You refer to your console, find the enemy on your scanner, steer toward them. Now you're upon them. You look through your window, up your shields, get ready to fire your torpedos.

From the distance, the clones burst forth, one at a time, firing. Your shields are usually sound, but the clones are so fast, you have to fire in anticipation before you can see them. You begin timing them. They change their pattern.

Energy is running low and you have only a few of your fifteen torpedos left. You must get at least four of the clones. Your palms are sweaty, your stomach anxious. Can you make it? The alternative is destruction.

Color, three-dimensions, hi-res animation—entirely drawn using the *E-Z Draw* program by the same company—make this possibly the outstanding game of its kind for the season. Hyperspace is patterned after that in the *Star Wars* movies, and it works. Beyond it, the universe continues to move out toward your ship. Enemy ships come out of the void and swoop past you realistically (if space battle can be realistic).

This is a game of skill, a short game to be tried over and over. As your skill improves, the game expands. You can land at bases, refuel, and rearm. What are the bases like? You'll have to tell me. Those clone fighters are hard to get! MCT

Cyber Strike by Nasir. Sirius Software, Sacramento, CA. Apple II or II+, 48K, DOS 3.2 or 3.3. $39.95.

Tax Planner. Don't wait for April to purchase Apple Computer's new *Tax Planner*—rather, you'll want to have it *before* the end of the year.

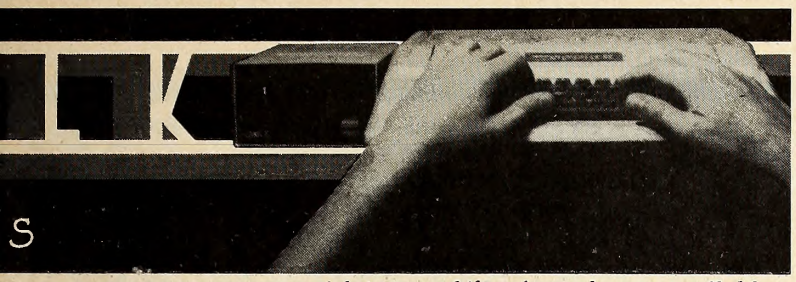
The *Tax Planner* can consider many different configurations of your tax, find the best way to compute each, and compare the final tax to be paid for each. Thus, it can show you the advisability of taking short-term or long-term gains or losses this year. It even lets you project to see whether you'd be better off to take them next year or later.

Tax Planner will look for the least tax for you to pay for each configuration among possibilities including regular, income averaging, maximum, preference, and alternative minimum.

At any time of year, *Tax Planner* allows you to see the tax consequences of possible financial events, such as income changes or major sales, before you enter into them. For each possibility, you create a scenario. These scenarios, with their potential results, can be altered and manipulated. They can also be saved, recalled, and printed out.

Once you've input the data for a scenario, the Apple takes less than a second to figure all the possible projected taxes and choose the best. This is true even if you are figuring up to nine alternatives at once. In this case, it will give you the best tax and tax method for each alternative.

Most of your tax planning is done on the tax matrix, a table showing all the categories to be considered in figuring your tax, along with three columns for alternative configurations or future years. Using one key, you can scroll these columns to



see as many as you wish to use of the nine columns available.

As you begin to fill in the data in the tax matrix, should you wish a definition of the function of a category, you have only to type a ? (or /) to switch to a description of it.

Tax Planner comes with a fifty-four-page documentation manual. You'll be glad to hear that plenty of that is white space. Actually, the instructions are a mere twenty pages; the brevity is not because the program is oversimplified, but because Apple's documentation writers have done a superb job of clear, definitive writing.

The instructions consist primarily of sample scenarios to input, save, and print. If you follow these, the program seems to teach itself to you.

The rest of the manual is devoted to backup. A reference section puts everything in easily findable form, lays out the planner in chart form, and expands on the instructions in more usual detailed instructional form. The Reference Summary specifies the IRS publications useful in working with each data category in the planner.

Three appendices give specific names and numbers of forms and publications referenced by the *Tax Planner*; outline the tax computation algorithms used in the program; and explain how to set up an Apple system, a section usually incorporated into the beginning of documentation where veterans must trudge through it or take a chance on missing something new.

Two disks are included in the *Tax Planner* package, the second as backup.

The *Tax Planner* and manual have been reviewed by Arthur Young and Company and have been accorded that Big Eight company's approval. MCT

Tax Planner. Apple Computer Inc., Cupertino, CA. Apple II/II+, 48K, 16-sector disk environment. $120.

Hellfire Warrior. By Jon Freeman and Jeff Johnson. Latest entry in the Dunjonquest series, this adventure picks up where *Temple of Apshai* left off. You can bring characters to it from *Apshai* or from other games, but don't try bringing anyone who hasn't made it through all four *Apshai* levels! The innkeeper will also generate characters for you if you wish—and they start off with experience in five-figure numbers.

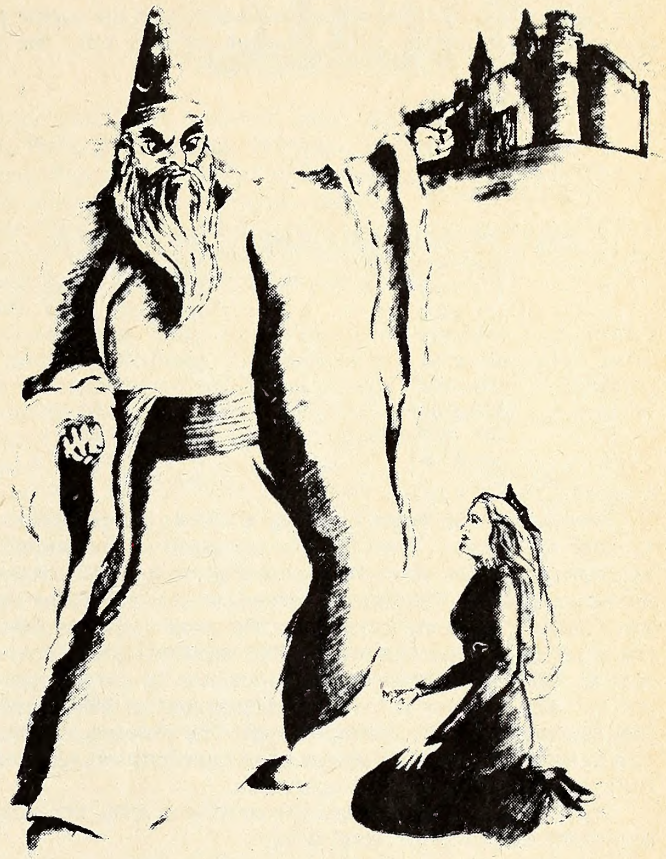
The object of *Hellfire Warrior*, as in *Apshai*, is to build your character up in strength, experience, and money until it can safely make its way in real-time through all four levels of play. In *Hellfire*, so named because of the fires of Hell that persist in unexpectedly breaking through the ground and burning your feet, there is an additional object: to save a princess locked in enchanted sleep deep in the dungeon. Having a specific goal is a great improvement over *Apshai*.

There are numerous other improvements over *Apshai*, and *Apshai* is a super adventure for adventuresome people. There are more options in almost every area of play; everything runs faster, even the generation of graphics; most important, you can save the game.

Once you find the princess—in the form of a treasure; you're only sure you have her because your weight nearly doubles—you must take her back to the innkeeper to win.

Fantasy game fans will love *Hellfire Warrior*. Other game players, though they probably won't ever persevere all the way to the princess, can also enjoy the game. Mapping the dungeons is fascinating and staying alive is a true gameplayer's challenge. MCT

Hellfire Warrior by Jon Freeman and Jeff Johnson. Automated Simulations, Mountain View, CA. ROM Applesoft, 48K, disk. $29.95. ■



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Assembly Lines

from page 16

this routine is called, the screen is cleared and the cursor put in the upper left corner. This ensures us that only the word *APPLE* will be printed on the screen.

```
1 * TEST PROGR. #1
2 *
3 OBJ EQU $300
4 ORG EQU $300
5 HOME EQU $FC58
6 *
7  START  JSR HOME  ;CLEAR SCREEN     300—  20 58 FC
8         LDA #$C1  ;'A'              303—  A9 C1
9         STA $700                    305—  8D 00 07
10        LDA #$D0  ;'P'              308—  A9 D0
11        STA $701                    30A—  8D 01 07
12        STA $702                    30D—  8D 02 07
13        LDA #$CC  ;'L'              310—  A9 CC
14        STA $703                    312—  8D 03 07
15        LDA #$C5  ;'E'              315—  A9 C5
16        STA $704                    317—  8D 04 07
17 END    RTS                         31A—  60
```

The routine will begin by doing a JSR to the HOME routine to clear the screen. Then the accumulator will be loaded with an immediate $D0, the value for the letter A. This will then be stored at location $700 on the screen, which will cause the letter A to be visible on the screen. The next value loaded is for the letter P, and this is stored at $701 and $702. It was not necessary to reload the accumulator, since storing the number does not actually remove it from the accumulator. The number is just duplicated at the indicated spot. The process continues in this pattern until all five letters have been printed, and then an RTS returns us to normal operation.

Once you have assembled the routine at $300, try calling it both from the monitor level with:

300G (RETURN)

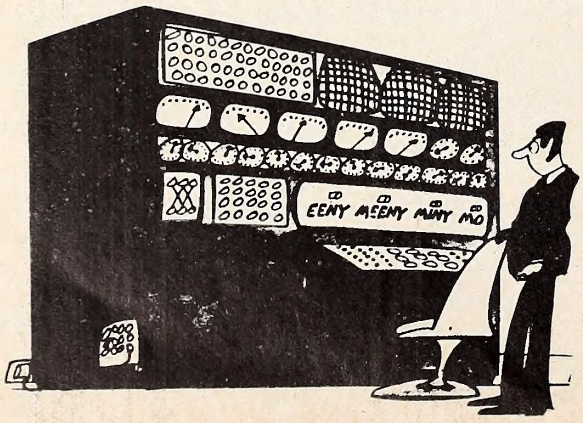
and from Basic (either one) with:

CALL 768 <RETURN>

You should also change the LDA/STA to the X and Y register equivalents to verify that they work in a similar manner.

Summary. You now have at your disposal a total of eight opcodes and a familiarity with assemblers. These few opcodes are probably the most often used, and, with just these alone, you can do quite a number of things. The JSR allows you to make use of all the routines already available in the Monitor. I highly recommend getting *The Apple Monitor Peeled* by W.M. Dougherty for more information on using these routines. His book gives a lot of detail on what is available.

Next issue, we'll look at some more advanced addressing techniques, how to do counters and loops, and all sorts of new things! Until then, Happy Appling! RTS ❑■



Mahood/The Bulletin/Sydney/reprinted from World Press Review/May 1980

from page 12

cisions determine the fate of the *Bismarck*. 16K, ROM Applesoft, cassette. $15.

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☐ *GROW* is an extensible system for authoring creative CAI programs, adventure games, and dynamic knowledge networks. Knowledge is represented textually by nodes, which may be edited and executed like programs. 32K, Applesoft, disk. $35.

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☐ *Windfall.* Have high energy prices and short gasoline supplies left you with more time around your Apple? As chief executive of Engulf Oil Co., you join the other side of the petro world, trying to turn crisis into cash. 32K, Applesoft, disk. $19.95.

Galaxy, San Diego, CA
☐ Galaxy *Space War 1 (WAR 1)* simulates in hi-res the environment encountered in a space war between 2 galaxies. In this strategy game, player has complete control of space fleet's tactical maneuvers. Each fleet battles toward the opponent's galaxy, attempting to destroy it and win the war. Hi-res, 1 or 2 players. 48K, ROM Applesoft, DOS 3.2 or 3.3. $39.95.

Hayden Book Company, Rochelle Park, NJ
☐ *Sargon II* by Kathe and Dan Spracklen. Put the champ of champs in your stocking this year! "This program represents a giant step forward in microcomputing Chess . . . an excellent program which will provide the true challenge for many players. . . . Save your money and buy *Sargon II*. . . ." *80 Software Critique.* Cassette, $29.95; disk, $34.95.

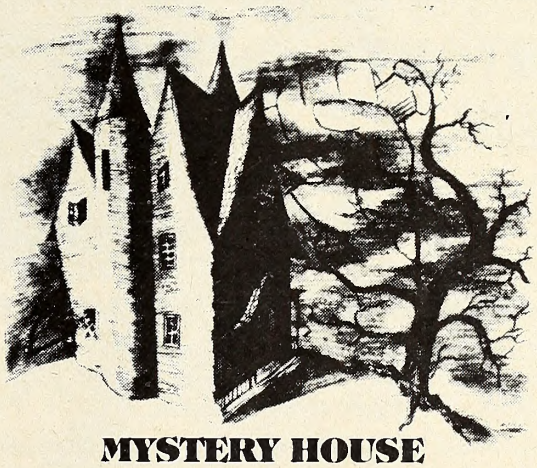
Instant Software, Peterborough, NH
☐ *Skybombers II.* Air warfare becomes a vivid reality as you and your opponent command fighter-bomber fleets of two nations at war. Sounds of battle and graphic explosions. 32K, disk, paddles. $19.95.
☐ *Santa Paravia and Fiumaccio.* You rule and control the future of an Italian city-state. If your decisions are wise, your realm prospers; otherwise, expect drought and invasions. Up to 6 players. Super graphics. 48K, ROM Applesoft. $9.95
☐ *Golf.* Select from 9 clubs in your bag and determine the angle of each shot as you try to avoid displayed hazards. One or two players. No rainouts. 20K, Applesoft. $7.95.
☐ *Super Shooter.* Got your shooting skills honed to a razor edge? Package includes *Invaders from Space*, our version of the well-known arcade game; and *Howitzer*, an adjustable difficulty game for 1 or 2 players. 24K, Integer Basic, paddles. $9.95.

Microsoft, Bellevue, WA
☐ Microsoft *Adventure* is the complete microcomputer version of the famous fantasy/logic game. *Adventure* takes the player into an underground labyrinth full of treasures to find, puzzles to solve, and hazards to avoid. Difficulty increases as the player advances further into the cave. Games may be saved on disk to be resumed later. 32K, disk. $29.95.

Micro-Ware Distributing, Pompton Plains, NJ
☐ *Road Rallye.* A stimulating hi-res auto race game with five spectacular full-screen tracks. $14.95.
☐ *Super Sea War.* Hi-res graphics and unique sound add to this computer enhanced version of battleship. 3 levels of play including Super Salvo with missiles. $13.65.

MUSE, Baltimore, MD
☐ *Santa's Voice. The Voice* tailored to the season with Santa's face doing the talking. Vocabulary has been extended to include seasonal greetings and a merry "Ho ho ho." Child selects words, Santa says them; child hears sense or nonsense of chosen words immediately. 48K, disk. $39.95.
☐ *The Best of Muse.* 5 games: *Escape, The Maze Game, Music Box, Side Shows, Tank War.* Play holiday music, compete with each other in several games that allow more than one player. 32K, disk. $39.95.
☐ *Three Mile Island* by Richard Orban is now in fast-running machine language, making this simulation of a nuclear reactor—you run it, meet rising power demands—reach new heights of realistic simulation gaming. New: demo mode, showing reactor from startup to meltdown. 48K, disk. $39.95.

On-Line Systems, Coarsegold, CA
☐ *Hi-Res Adventure #1, Mystery House.* You find yourself before a spooky old mansion. Your abilities as a detective will be



MYSTERY HOUSE
HI-RES ADVENTURE #1

Your APPLE computer becomes your eyes and ears as you enter a spooky old mansion in search of treasure. You are in complete control as you open cabinets, smash walls etc. Danger is ever present as you find your co-adventurers being murdered one by one. Can you find the killer before the killer finds you?

- OVER A HUNDRED HI-RES PICTURES
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Look for Hi-Res Football coming soon

tested in a classic murder mystery as you find your friends being murdered one by one! 48K, disk. $24.95.

☐ *Hi-Res Adventure #2, The Wizard and the Princess.* The largest and most complex of the hi-res adventure series. A fantasy adventure in which you encounter gnomes, giants, and even an evil wizard! Perhaps you're the adventurer who can save the princess? Many have tried and failed. Beautiful 21-color hi-res graphics. 48K, disk. $32.95.

☐ *Hi-Res Football.* The football game we all knew the Apple was capable of but no one seemed able to produce. A true game of strategy and skill. All action is shown as it occurs in hi-res graphics under your complete control. One or two players. 48K, disk. $39.95.

☐ *Hi-Res Adventure #0, Mission: Asteroid.* Can you save the earth from certain destruction? If so, you will have to become an astronaut—fast! Easier than our other hi-res adventure games, but far from easy. Fantastic 21-color hi-res graphics! 48K, disk. $19.95.

Powersoft, Pitman, NJ

☐ *Space Trek J.* Command the starship *Lexington* to patrol the galaxy, using a variety of weapons, sensors, and other devices against the Klarian fleet. 32K, ROM Applesoft, disk. $19.95.

☐ *World of Odyssey.* A new adventure game. Explore 353 rooms on 6 levels full of dragons, dwarfs, orcs, goblins, gold, and jewels. 48K, ROM Applesoft, disk. $24.95.

☐ *Real Estate Game.* Wheeling and dealing based on the world's most popular board game. 2 to 6 players on full-color lo-res board simulation. Integer Basic, cassette or disk. $14.95.

☐ *Dynamaze.* Real-time action. Move in rectangular game grid, drawing or erasing walls to deflect balls into your goal or away from your opponent's. Gain high points for goals, but lose points for elapsed time and moving. Paddle controls speed; can play fast as hockey or slow as chess. Reversible. Integer Basic, cassette or disk. $14.95.

☐ *Galactic Empires.* Pits 1 to 20 players against each other and the computer in a struggle for control of up to 40 star systems. Applesoft, cassette or disk. $14.95.

Quality Software, Reseda, CA

☐ *Fracas* by Stuart Smith. Fantastic adventure game like no other. Up to 8 players at the same time journey in the land of Faroph, searching for hidden treasure while warding off unfriendly and dangerous creatures. Players compete with each other or gang up on the monsters. Can be saved. 32K. Cassette, $19.95; disk, $24.95.

☐ *Beneath Apple Manor* by Don Worth. Descend into an underground maze of corridors, rooms, and secret passages in quest of rich and powerful treasures. Dungeon complex consists of many floors, each lower level more dangerous than the last. Strategy is extremely important; experience allows you to increase your capabilities. Integer Basic. Cassette, 16K, $14.95; disk, 32K, $19.95.

☐ *Asteroids in Space* by Bruce Wallace. An action space game in hi-res. Your spaceship is traveling in the middle of a shower of asteroids, beleaguered by an alien ship whose mission is to destroy you. Game paddles rotate your ship, fire your laser gun, and give your engines thrust to propel you. Superfast graphics and sound effects. 32K, disk. $19.95.

☐ *Fastgammon.* Known for its outstanding graphics and its speed of play, this popular program is the standard to which other computer backgammon games are compared. Hi-res color and musical cartoons at game's end make *Fastgammon* entertaining as well as challenging. 24K. Cassette, $19.95; disk, $24.95.

☐ *Battleship Commander* by Erik Kilk and Matthew Jew. In this game of strategy, you and the computer each secretly position five ships of different sizes on a 10x10 grid. Then, the shooting starts. Logic and luck are required to beat the computer. Sound effects, flashing lights, and well-designed keyboard interface add to the enjoyment. 32K. Cassette, $14.95; disk, $19.95.

Rainbow Computing, Northridge, CA

☐ *A Stellar Trek.* The definitive hi-res color version of the classic *Startrek* game, a colorful, exciting battle simulation. The battleground is the entire galaxy; the enemies, Klingons and Romulans. You have many command prerogatives, use of starship weaponry, maintenance of energy reserves, and more. 48K, ROM Applesoft, disk. $24.95.

☐ *Adventure.* The same full function game that normally runs on much larger mainframes. 64 objects, 140 locations, more than 700 travel options! Savable. 48K, disk. $29.95

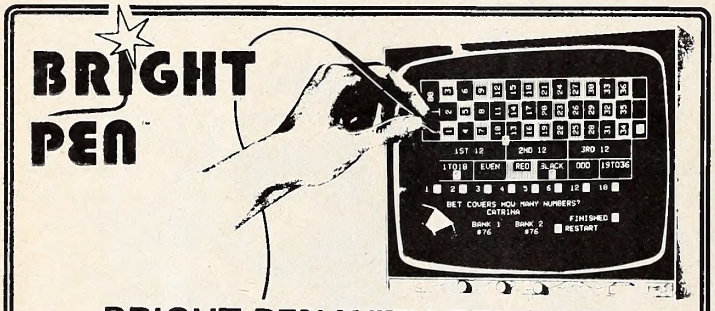
☐ *Rainbow's Casino.* A combination of gambling games. Save your money! Don't go to Vegas. These 9 programs will turn your Apple into a gambling casino. Includes *Yahtzee, Slot Machine, Poker, Keno, Acey-Deucy, Horse Race, Black Jack, Craps,* and *Roulette.* All in text mode, except for *Slot Machine.* Integer Basic. Cassette, $19.95; disk, $24.95.

Softape, North Hollywood, CA

☐ *Apple-21.* Play real Las Vegas-style blackjack on green felt table with hi-res poker cards. As many as three players can challenge the dealer, all hands shown at once. Game allows entry and exit of individual players between each hand. Keeps tallies and announces balance when players leave. Announces shuffling and new decks. 32K. Cassette, $14.95; disk, $19.95.

☐ *Craps.* Complete Las Vegas-style Craps table in hi-res. Jump at will between inner and outer tables, one per screen. All possible bets are acceptable with this detailed simulation. Roll of animated dice passes as in real Craps. 48K. Cassette, $14.95; disk, $19.95.

☐ *Roulette.* Complete your simulated Las Vegas casino with realistic hi-res Roulette table allowing all standard Roulette



BRIGHT PEN WITH PENSOFT

Pensoft is available for the premium APPLE light pen. Pensoft adds six new commands to APPLESOFT to give you the easiest control possible.

The BRIGHT PEN is a fast and effortless alternative to keyboard input for menu selection, game plays, and graphic generation. Pensoft can be used with almost any program in your library.

HI-RES and PENSOFT can be used together! Two of SOFTAPES'S HI-RES programs, Roulette and Craps, use the bright pen.

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THE *Intelligent* LIGHT PEN

PENSOFT on disk $29.95
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SOFTAPE

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bets for 1 or 2 players. Wheel of fortune spins to determine winners. Bright Pen use to place bets is optional. 32K. Cassette, $14.95; disk, $19.95.

☐ *Baseball Fever.* Emphasis here is on cleverly managing a team: choose lineup, pinch-hitters, pitchers; decide who should sacrifice or steal. You've got players to work with: the Yankees and the Red Sox. At the end of each game, you can save and update stats for a whole season. Lo-res graphics are optional. 48K. Cassette, $12.95; disk, $19.95.

Strategic Simulations, Palo Alto, CA

☐ *Computer Ambush* is a simulation game of man-to-man combat in World War II. The game features a hi-res display of a French village; rules cover everything from plastic explosives to hand-to-hand combat. Each player may command up to 10 soldiers in any of 7 (3 solitaire and 4 two-player) scenarios. Applesoft, 48K, disk. $59.95.

☐ *Computer Bismarck* features a hi-res color mapboard of the North Atlantic. One or two players take turns moving their battleships, cruisers, aircraft carriers, destroyers, submarines, convoys, oilers, and aircraft across the North Atlantic. Combat occurs when opposing units have spotted each other. Applesoft, 48K, disk. $59.95.

☐ *Computer Napoleonics.* Intended as an introduction to wargaming, *Computer Napoleonics* allows the player(s) to re-create the Battle of Waterloo, Napoleon's final battle. The game includes hi-res mapboard, infantry, cavalry, and artillery units, and rules covering demoralization and Prussian reinforcements. Applesoft, 48K, disk. $59.95.

☐ *Computer Quarterback* is a real-time football strategy game that gives players the option to draft their own teams before the game begins. Once play begins, players choose among 36 offensive plays and 31 defensive alignments. You might even choose to play against your computer, but don't expect to win too often, for it remembers every play you call and uses this information to beat you. Applesoft, 48K, disk. $39.95.

☐ *Computer Air Combat* puts you in the cockpit of any one of 36 famous planes from World War II as you attempt to wrest air superiority from your opponent. Playing against another person or against the computer, you can fly any of 5 different missions: V-1 intercept, nightfighter intercept, bomber escort, dogfight, or air race. Applesoft, 48K, disk. $59.95.

☐ *Computer Conflict* contains two games, *Rebel Force* and *Red Attack! Rebel Force* allows you to command a modern mechanized force as it attempts to put down an insurrection led by your computer. *Red Attack!* is a 2-player game of an assault by a Soviet regiment on 3 key towns. Both games feature hi-res mapboards and unit silhouettes. Applesoft, 48K, disk. $39.95.

SubLogic, Savoy, IL

☐ *FS1 Flight Simulator* offers real-time 3-D out-the-window animation of flight. View updates at a rate of 3 times per second. Either keyboard or joystick controls aircraft. Control power, pitch, and roll. *British Ace* aerial battle game awaits your proficiency at flying. Cassette, 16K, $25; disk, 32K, $33.50.

Synergistic Software, Bellevue, WA

☐ *Wilderness Campaign.* Embark on a hi-res crusade to destroy the evil necromancer. Survive quicksand and avalanches as you seek out and explore ruins and castles to defeat their monstrous inhabitants. Win treasure and magical weapons to hire and equip an army suitable for the final battle. Game differs with each playing. 48K. Cassette, $17.50; disk, $20.

☐ *Doom Cavern/Sorcerer's Challenge.* Hi-res version of the

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PRESENTS
HI-RES FOOTBALL
By JAY SULLIVAN And KEN WILLIAMS

This is the football game you always thought your Apple was capable of, but no one seemed able to deliver!

Of course, Hi-Res Football portrays the field and players in full animated Hi-Res Graphics, but do not confuse it with football games of the arcade variety. This game captures the strategy aspects of an actual football game. As coach you: call the plays, try to use the clock to your advantage, make those critical fourth down decisions, battle for field position and more! On the playfield, as quarterback, you must be able to read the defense while constantly eyeing your receiver and at the same time trying to "Fake Out" the defense. It is impossible to describe here the feelings one gets when you successfully complete that two minute goal-to-goal drill or on defense when you sack the quarterback on third and goal. Please visit a computer store in your area to request a demonstration.

Thank you.

Runs on any 48K Apple II or II Plus, DOS 3.2 or 3.3. Available now for $39.95 on disk from your local computer store or you may order directly from:

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popular dungeons and dragons type role-playing game. Establish the strength, intelligence, etc., of your party, then explore the complex dungeon. Second game is a duel of mighty spells between two powerful magicians. Use strategy and tactics to defeat your opponent. Integer Basic, 48K, disk. $20.

☐ *Odyssey: The Compleat Apventure.* Embark on a heroic quest across the dreaded Sargalo Sea to explore islands, caverns, and castles. Gather the forces and weapons needed to defeat the cruel Caliph of Lapour. Three interlocking programs using several hi-res and lo-res maps provide an unending variety of opponents and challenges. 48K, Integer Basic, disk. $30.

HARDWARE

ALF Products, Denver, CO

☐ The *Apple Music II,* a 9-voice music card, is especially good for Christmas due to the large selection of preprogrammed Christmas carols available. Its highly acclaimed software for entering your own music makes it the ideal music card choice for the rest of the year, too. 32K, disk, home stereo. $195.

☐ The *Apple Music Synthesizer,* a 3-voice card, has the features of the Apple Music II plus professional-quality sound! 32K, disk, home stereo. $265. Both cards have ALF's outstanding reliability and advanced, easy to use software; plus detailed owner's manual.

ATV Research, Dakota City, NE

☐ If you're willing to spend 30 minutes putting one together, ATV's RF Modulator kits are a super value. *Pixe-Verter* kit is a channel 2 through 6 video only unit for $8.50. *Pixe-Plexer* kit is same but also sends audio trhough your TV for $24.50.

☐ *Micro-Verter* is a special hi-fi UHF Video-to-RF modulator for Apple. If you don't get higher picture quality and better color than other brand modulators, ATV will refund full price. Tested and approved by Apple Computer Inc. $35.

☐ *Micro-Verter II* is a second generation, hi-fi UHF RF modulator designed for Apple. Sound as well as video is transmitted to your TV. Self-contained with AC power supply. $75.

California Computer Systems, Sunnyvale, CA

☐ The *Model 7728 Centronics Printer Interface* gives compatibility with printers using Centronics-type parallel interfaces. Onboard 256-byte ROM provides driver firmware and controls ASCII character output to printer. The 7728 includes 8-bit data output bus, 4 status inputs, Data Strobe and Acknowledge handshake signals, and printer reset signal. $119.95.

CJM Industries, Reston, VA

☐ *Applexpander,* heart of the CJM Microsystem, plugs into game I/O socket. 2 input sockets accept Microstik, light pen, or other input devices. Output socket drives AC Control Box, relay modules, LED arrays, other controllers. $44.95.

☐ *Microstik.* A dual axis joystick. Features all-metal rugged chassis, heavy duty cable and Jones plug. Includes 2 pushbuttons for interactive control. Can use 2 Microstiks simultaneously. Extension cables are available (not included). 16K. $59.95.

Computer Case Company, Columbus, OH

☐ Make the Apple portable. Attractive case carries Apple in fully operational configuration. Simply plug in and you're in business. Storage space for manuals, disks, cassettes, working papers. High quality luggage material. Security straps, foam rubber protect computer. For Apple with 1 drive, $109; with 2 drives, $119; with 2 drives and 9-inch monitor, $129.

Enhanceware, Durango, CO

☐ *Dan Paymar's Lower Case Adapter* makes a great gift for anyone who uses the Apple for text, and for others, too. LCA-1 suits Apples with old motherboard; LCA-2 works for new Apples (revision 7 Apple CPU board). $85.

Epson America, Torrance, CA

☐ MX-80 80-column dot matrix printer offers disposable print head, 12 combined print modes, bidirectional 80-characters per second printout, 64 graphics characters plus full ASCII set with lower case descenders, programmable leading. Adjustable mini-tractor accommodates up to 11-inch paper. Suggested retail less than $650.

Image-21, Dakota City, NE

☐ Image-21 offers hobbyists and dealers a full line of color and B&W monitors including Hitachi, Koyo, Leedex, and customized Sony units. Detailed literature and technical assistance available to assist in selection of correct monitor for specific needs. Ask your dealer to contact Image-21 about your monitor requirements.

Integral Data Systems, Natick, MA

☐ The new *Model 445 Paper Tiger* printer from Integral Data Systems (IDS) is a new commercial-grade printer that includes more standard features than can be found on any other tractor-feed impact printer available for under $1,000; and the optional IDS DotPlot graphics package provides the ability to print everything from bar codes to complex illustrations. $795.

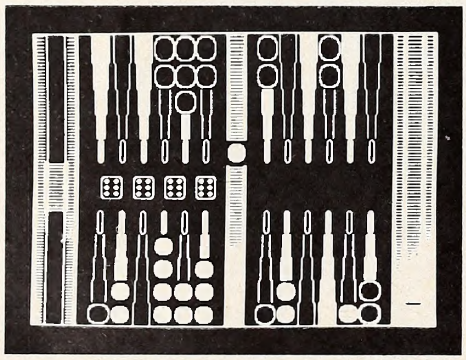
☐ The IDS *Paper Tiger Model 460* is a desktop printer that produces correspondence quality printing at the speed and price of a matrix printer. It also provides hi-res graphics capability and offers a variety of programmable print control functions including proportional character spacing and automatic text justification. $1,295.

Lobo Drives International, Goleta, CA

☐ The *LCA22* is a Shugart SA 800/850 single/double-sided, dual-density 8-inch drive controller. Gives 1 to 2 megabytes formatted storage on a dual floppy subsystem. Allows you to read a double-sided 8-inch drive as one large megabyte file. $595.

☐ *Apple Mini.* A standard Shugart 390 with Lobo Analog board, disk drive can be used with Apple's disk controller or with Lobo's Apple-compatible controller. Lobo controller will

MICROGAMMON II



Your APPLE COMPUTER has never looked so good. Microgammon plays on a level never before achieved and produces Hires graphics that will astound you. Each piece will "slide" from position to position as moves are made.

MICROGAMMON II will adjust its level to play at your own level. Both beginners and pros will enjoy MICROGAMMON II.

Microgammon II is the best backgammon game available and will run on any APPLE COMPUTER.

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run Apple mini drives, but includes a toggle-type switch to go from Pascal to Basic and back. $565.

Microsoft, Bellevue, WA

☐ The Microsoft *SoftCard* is a circuit card that contains a Z-80 processor and allows the Apple to run CP/M software. The package includes both the CP/M operating system and Microsoft Basic on disk, ready to run on the Apple. The *SoftCard* is compatible with existing Apple software and peripherals. 48K, disk. $349.

☐ Microsoft *COBOL-80* runs under the CP/M operating system, using Microsoft's *SoftCard* peripheral. *COBOL-80*, which meets the 1974 ANSI standard, features four kinds of data files, full-screen I/O and single-command editing, program chaining with parameter passing, and program segmentation. Also supported are advanced verbs; abbreviated and compound conditions, packed and binary data formats; runtime assignment of filenames; full COPY facility; trace style debugging; and packed decimal data format. 48K, *SoftCard*, 2 disk drives. $750.

☐ Microsoft *FORTRAN-80* runs under the CP/M operating system, using Microsoft's *SoftCard* peripheral. It generates true Z-80 machine code, allowing programs to execute typically 2 or 3 times faster and as much as 20 times faster than programs compiled using other Fortrans for the Apple. *FORTRAN-80* supports double precision, integer X 4 and integer X 1 data types and has an extensive library of floating point, math, and I/O routines. 48K, *SoftCard*, disk. $195.

The Micro Works, Del Mar, CA

☐ The *DS-65 Digisector* is a random-access video digitizer that converts a TV camera's output into digital information the Apple can process. Features 256x256 resolution, 64 levels of gray scale. Can be used for computer portraiture, security systems, moving target indicators, bar code reading. Comes with onboard EPROM software. $349.95; with camera, $599.

Novation, Tarzana, CA

☐ *The Cat* acoustic modem is a 300-baud, answer/originate, asynchronous EIA RS232C modem that can transmit data over all telephone lines. Bell 103 compatible. Can talk to another *Cat*. Requires interface card. *The Cat:* $189.

☐ *The D-Cat* is a directly coupled modem with the portability, ease of use, the low cost of an acoustic. Does not require phone adapters. Compatible with all Bell 100 modems and *D-Cats*. Fast—up to 30 characters per second. Requires interface card, purchased separately. *The D-Cat:* $199.

Progressive Software, Plymouth Meeting, PA

☐ One interesting present is the *Lipson Light Pen*. Now available for the Videx 80-character card and will expand to other cards in the future. Comes with more than 20 programs on disk, with many more due. 48K. $39.95.

Softape, North Hollywood, CA

☐ *Paddle Plus*. If you often interchange paddles, joysticks, and pens, you need *Paddle Plus*. This extender plugs into your game I/O port and is conveniently secured outside your Apple for easy access. $14.95.

☐ *Reset Guard*. Stop accidental resetting with this hardware package that plugs directly into your Apple's keyboard interface. It disables reset unless you hit the key twice in one second. Cannot be used simultaneously with lower case adapter chip. Guard your Apple and your sanity with *Reset Guard*. $34.95.

Syntauri, Ltd., Palo Alto, CA

☐ Live! From "Jingle Bells" to the Bach *Christmas Chorale*—the AlphaSyntauri polyphonic digital synthesizer lets you play, record, and play back with your own instruments. Use ALF or Mountain Computer oscillators, Syntauri software and 61-note keyboard. Requires 48K. ALF version, $1,295; Mountain version, $1,424. Both plus oscillator hardware.

Vector Electronic Company, Sylmar, CA

☐ *The Vector 4609* board is a peripheral interface plugboard with provisions for three additional types of input/output connectors, extended board area, and dual heavy-duty power buses between the DIP IC leads for easy, short bus connections. Designed for construction of special control, communications, peripheral, or memory interface circuits, it also serves for breadboarding experimental circuits. 1/16" glass epoxy composite with .042" holes on 0.1" grid, nickel gold edge connectors. $20.74.

Xymec, Irvine, CA

☐ *Xymec Hy-Q 1000* is a low-cost letter-quality printer containing 5 built-in microprocessors that minimize need for complex personal computer software. Options include LED display, tractor feed, and choice of RS232-C, IEEE-488(GPIB), and Centronics 779 compatible interfaces. Also functions as versatile, sophisticated electronic typewriter. $2650.

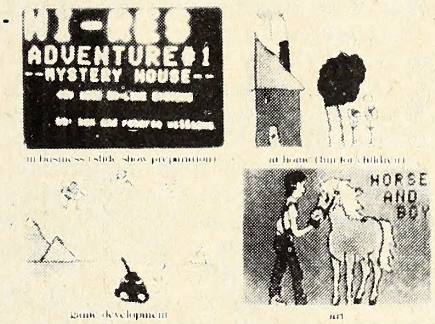
WORKING WORLD

Apple Computer, Cupertino, CA

☐ Make even more brilliant deductions with new *Tax Planner*. A breakthrough in income tax aids, *Tax Planner* allows you to compare impact of various scenarios on your potential tax bill. Use it before the taxable year's end to determine wisdom of taking possible short or long-term gains or of averaging. Instant simultaneous computations with printout. DOS 3.3. $120.

☐ *Dow Jones News and Quotes Reporter*. Plug your Apple into Wall Street. Dial Dow Jones databank, enter your password, and find at your fingertips all stories filed for last 3 months

For use--



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The most powerful graphic development system available. Upper/lower case text may be drawn in any size, direction or color. Pictures may be sketched and filled in with any of 21 HI-RES colors (must be seen to believe!!) A shape may be constructed automatically from any object appearing on the HI-RES screen.

Paddle-graphics is for use with the standard game paddles distributed with your APPLE and TABLET-GRAPHICS is for use with APPLES' GRAPHICS TABLET.

Paddle and Tablet-Graphics are available now at your local computer store and require 48K Applesoft in rom and a disk drive. To order directly send $39.95 for Paddle-Graphics or $49.95 for Tablet-Graphics to:

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Recommended by InfoWorld

with Dow Jones News Service, *Wall Street Journal*, and *Barron's*, plus stock quotes for more than 6,000 securities. Modem, DOS 3.3. $95.

☐ Track progress of your holdings, test possible investment combinations with *Dow Jones Series Portfolio Evaluator*. Store and update 100 portfolios of 50 stocks each per disk. Password allows access to quotes on more than 6,000 securities. 32K, Applesoft, modem, DOS 3.2 or 3.3 with Basics disk. $50.

☐ *Apple Plot* displays and interprets any numerical information on accurate bar, line, and scatter charts. On same axes, plot and compare 2 data graphs of as many as 100 points each. 6 graph formats. Enter points and the program automatically produces charts. Printout capacity. Applesoft, DOS 3.2 or 3.3 with Basics disk. $70.

Compumax, Palo Alto, CA

☐ *Micro Biz* pays checks, sends invoices, and receives multiple business reports through system of reliable small business accounting packages. Buy as stand-alone packages or as fully interactive system. *Micro Ledger, Micro Pay, Micro Rec, Micro Inv, Micro Pers,* $140 each; *Order Entry*, $350.

Continental Software, Rancho Palos Verdes, CA

☐ *The Mailroom.* Features up to 800 names per disk and allows the ability to sort on any of 12 items and/or special sorts on a portion of total entries. Prints labels 1, 2, or 3 across with master list. Sorts names in 1 to 6 seconds after reading them in. Disk. $29.95.

☐ *The Home Money Minders.* Have you been waiting for a simple to use, easy to edit checkbook program? This is it! Plus budget categories. Budget and expenses, comparisons and graphic charting. Transactions can be by check, credit card, or cash. Disk. $34.95.

☐ *Continental General Ledger.* A true double-entry bookkeeping system—complete audit trails—complete history of all transactions—comes with a detailed step-by-step users guide. Hi-res plotting of all accounts are also part of the program. Disk, $175; manual only, $15.

Galaxy, San Diego, CA

☐ *Analysis 1* (ANA 1) is a set of Basic programs enabling analysis of any time series data. From 26 to 260 data points can be plotted in 5-color hi-res. Plots moving averages; a least squares linear fit; filters for time, magnitude, or percentage changes; and user-created relationships between the data using +, −, x, / operators. DJI weekly average, 1897 to date, is included. 48K, ROM Applesoft, DOS 3.2 or 3.3. $49.95.

H&H Scientific, Oxon Hill, MD

☐ *Stock Market Utility Program.* Four programs by H. S. Pilloff provide for entry and storage of stock data, data correction (errors), stock splits, autoscaling hi-res display of performance (absolute, relative, and momentum), and building historical files electronically. 48K, ROM Applesoft, disk. $39.95 through 12/31/80; then $59.95.

Hardhat Software, San Francisco, CA

☐ *Whatsit?*, a conversational filing and query program, is designed for desktop indexing applications. Allows unlimited file headings and 2,000 entries per disk. Unique use of pointers and hash coding makes access instantaneous. 48K, Integer Basic, disk. Special until 1981, $95; regularly, $150.

Hayden Book Company, Rochelle Park, NJ

☐ *Energy Miser* by SuperSoft Associates. Don't pass this program by this holiday. It's a complete heating/cooling analysis program for your home or office that will calculate heat loss or gain due to poor insulation, leaky doors and windows, and more. Cassette, $24.95; disk, $29.95.

Howard Software Services, Los Angeles, CA

☐ Howard offers financially oriented software for the "serious Apple II user." All packages provide on-screen preparation and video or line printer output. *Tax Preparer*, disk, $69; *Real Estate Analyzer*, cassette or disk, $49; *Stock Portfolio Manager*, disk, $49; *Creative Financing*, cassette or disk, $49.

Information Unlimited Software, Berkeley, CA

☐ *EasyWriter* professional word processor is now available using 80 columns on a video display. Offers global search and replace, underlining, bidirectional printing, and file appending. Lets you create, review, and revise text in full view. 48K, Sup'R'Terminal, Doublevision, or Videx 80-column video card, 1 or 2 disk drives. $250.

☐ *EasyMailer*, continuous letter-writing module, automatically inserts information from your name and address file or user-definable data base into an *EasyWriter* text file. Prints on labels or on form envelopes. Requires *EasyWriter*. $69.95.

☐ *EasyMover* is a personal electronic mail system. Moves *EasyWriter* text across telephone lines to any other Apple. Automatically dials destination number, connects to computer, moves text, and saves transmitted text to disk. Requires *EasyWriter*, MicroModem or modem with Apple Communication Card.

Instant Software, Peterborough, NH

☐ *Finance and Investment.* Helps you in financial control and planning. Includes loan amortization, depreciation, mortgage prepayment planning, financial planning calculations. 32K, Applesoft, disk. $19.95.

Charles Mann & Associates, Yucca Valley, CA

☐ *Personal Text Processor* offers full word processing of letters and reports and up to 10 pages of text at a time. All edit features, moving text. User formats printing, specifies number of copies. All format options, including justification. Allows video display of all text controlled by game paddles. ROM Applesoft, 1 or 2 disks. $65.95.

Micro-Ware Distributing, Pompton Plains, NJ

☐ *Graph-Fit.* A great hi-res graphing program that will make 3-D bar charts, pie charts, or line graphs. Just enter the data and program will do the rest. Applesoft. $25.

Muse, Baltimore, MD

☐ *Super-Text II* adds a preview mode and optional shiftkey modification. Package includes backup copy. Totally new documentation is compact, easy to use. New *Super-Text Form Letter Module* will complement this program. $150.

Peachtree Software, Atlanta, GA

☐ Peachtree Software announces a total business software system for the Apple II. All programs require 48K, 2 disk drives, 132-column printer, language card or 16K expansion board, and Microsoft Z-80 softcard.

☐ The *General Ledger* is the basis for the accounting system, and is integrated with Accounts Receivable, Accounts Payable, and Payroll.

☐ *Accounts Receivable* provides complete invoicing and monthly statement generation and maintains the current and aged accounts receivable.

☐ The *Accounts Payable* package maintains current and aged accounts payable and incorporates a check writing feature. It maintains a complete vendor file with information on purchase orders and discount terms as well as active account status.

☐ The *Payroll* system allows for hourly, salaried, and commissioned employees and accumulates information for tax reporting. Generates monthly, quarterly, and annual returns for local, state, and federal governments. Prepares W-2s, maintains information on each employee. Includes tables for federal withholding and FICA and withholding for most states and cities from pre-computer or user-generated tables.

☐ The *Inventory* package provides detail reports on each item, including pricing, sales history and ordering information. It also generates a status report showing units on hand and a physical inventory worksheet. Automatically flags items for reordering.

☐ The *Mailing List* system maintains name and address information and allows selective printing of mailing lists or address labels.

Stocking Stuffers

Personal Computer Technical Analysis Group, New Orleans, LA

☐ The Technical Analysis Group is opening its membership to individuals and firms. The group was formed as a cooperative by traders to apply computer techniques to the analysis and trading of commodities and securities. Group supplies its members with original software programs. See our ad in this copy of *Softalk*.

Powersoft, Pitman, NJ

☐ *Business Utility-1* and *-2.* Two programs on real estate, banking, securities, leasing, investment analysis, and statistics. Rapid access to 10 frequently occurring business decisions in areas requiring speed and accurate analysis of data. Applesoft, cassette or disk. $24.95 each.

☐ *Super Checkbook.* Includes bar graphs that provide trend analysis data on month by month basis, as well as regular checkbook functions. Also sorts on several fields. 32K, ROM Applesoft; disk. $24.95.

Programma, Burbank, CA

☐ *Interactive Business Management System (IBMS)* is the most versatile, powerful accounting system for microcomputers. Repetitive entering of data is eliminated. Designed as an easy-to-use turnkey system, *IBMS* gives you the capacity and performance of larger systems without their complexities. Simplifies handling your ledger. Makes labels, and more. 48K. $1,495.

☐ *Securities Charting.* Designed to be convenient, effective, and time-saving. Helps the business and personal user analyze securities investments. Maintains up to 50 entries. Data is maintained by groups of stocks, maximum 10 per group. High, low, close, and volume charts; option to calculate 4, 7, 9, 14 day moving average trend lines and overlay the Dow Jones average. 4 programs. Hi-res. $79.95.

☐ *PIE 2.0 Word Processor.* The latest all-purpose system. Two great programs make most powerful total work processing system for Apple. *Apple PIE* is a free-form, screen-oriented text editor for full editing processes. *Format* uses simple codes embedded in input text to produce letters, documents, manuals, catalogs, scripts, formatted to your specs. 32K. 80-column version available. $129.95.

☐ *Screenstar.* An efficient and comprehensive screen format system complementing Programma's improved editor (*PIE*). Using more than 70 commands, utilizing *PIE* for input, it allows for windowing, tabbing, centering, pauses, speed control, code, and inverse-flash. Creates a run-time package for use in other programs. Natural for instructions and documentation. $49.95.

Progressive Software, Plymouth Meeting, PA

☐ *Super Sort and Search* is a free-form data base. Allows user to define his fields per record. Sorts automatically either alphabetically or numerically. Searches in generic and specific modes. Also appends files. 32K, Applesoft, disk. $74.90.

Rainbow Computing, Northridge, CA

☐ *Data Base.* This card file program is perfect for applications requiring cross-referencing of entries, such as bibliographies, recipes, or phone lists where you need to find either a person's number or a number's person. Up to 9 lines of 40 columns each; search by any item in any line. Good for large disk files. 32K, Integer Basic, disk. $20.

☐ *Write-On! I,* written by Betsy Speicher, is a professional word processor made easy. Use for letters, invoices, manuscripts, reports, term papers, legal documents, special forms, or any other writing task. Amazingly easy to learn and to use. Documentation binder is large enough to accommodate many floppy disks for text files. Interfaces with all popular printers. 32K, Applesoft, disk. $99.50.

☐ *Write-On! II* includes all the features of *Write-On! I* plus a data file merging system that can output a personalized form letter, check, or document for names on a mailing list. Create and maintain mailing lists or other data files, or produce mailing labels. Its preformatted files speed up output on unbuffered or high-speed printers. *Write-On! II* has script writing capabilities. 48K, ROM Applesoft, disk. $150.

☐ *Bowling Data System* by A. J. and C. J. Hooton. Provides accurate record keeping and report generation for bowling leagues of up to 40 teams, up to 6 players per team. Allows customizing. 32K, ROM Applesoft, disk, printer. $79.95.

Software Publishing Corporation, Palo Alto, CA

☐ *PFS* is a personal filing system software package for Apple II. With *PFS* you create a file of information by designing a form on the screen without programming. Information that can be stored, retrieved, and printed includes words, numbers, character strings, or pages of text. 48K, 16-sector disk-based system. $95.

Southwestern Data Systems, Santee, CA

☐ *The Correspondent.* Write letters, make up forms, use as a data base. Apple's screen is a "window" on an 80-column page (4-way scrolling). Disk only. SDS quality at only $34.95.

☐ *ASCII Express II.* Now your Apple can send or receive files from any on-line computer—from mainframe or another Apple! Autodial, built-in line editor, keyboard macros, upper/lower case and more. ROM Applesoft, 48K, disk. $59.95.

United Software of America, New York, NY

☐ *KRAM.* Keyed random access method. Modeled after system used on IBM virtual storage mainframes. 6502 machine language program provides ultra-fast-keyed retrieval/storage of data in either direct or sequential mode, by either full or partial key values. 80-page manual included. 32 or 48K, Integer Basic, disk. $99.95. ◨

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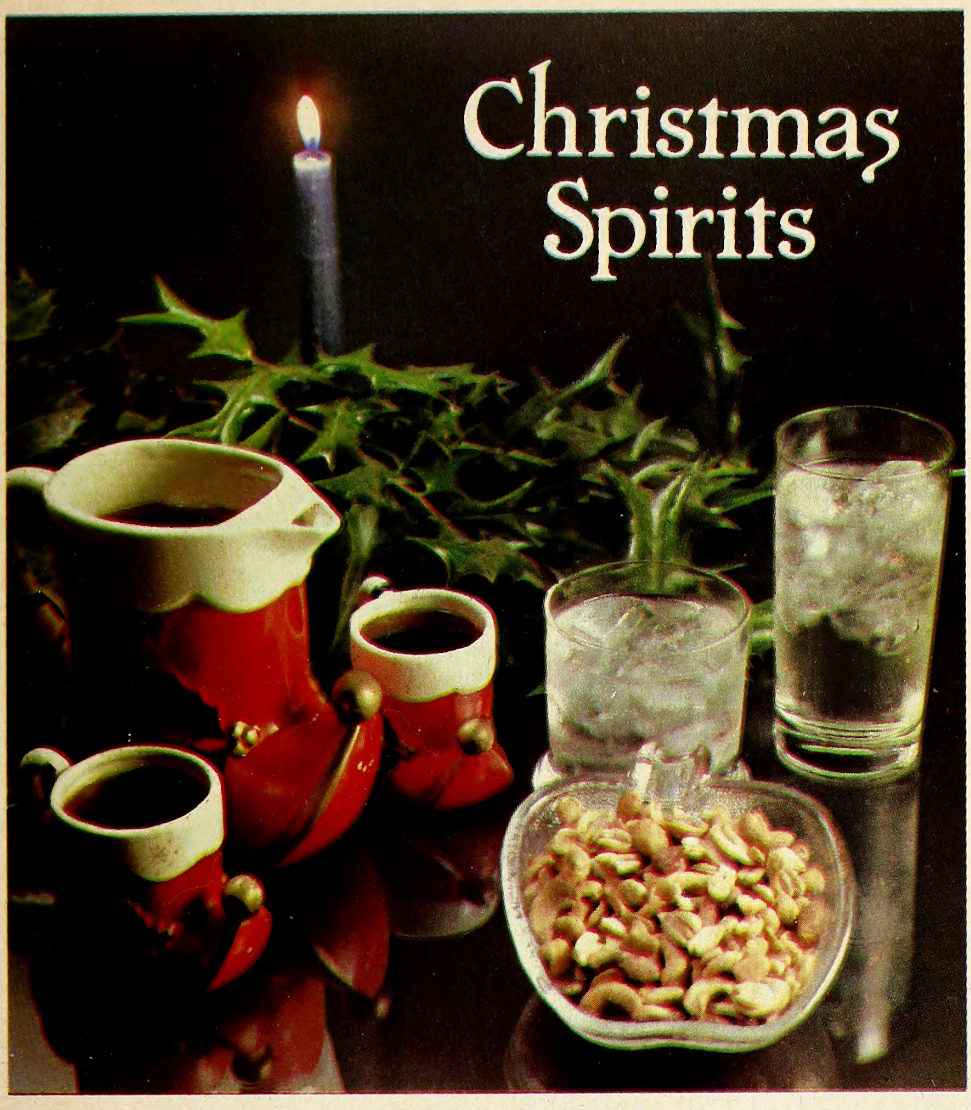

The holiday season brings a happy hustle of last-minute shopping squeezed in between office parties and open houses. It all culminates in the festive New Year's Eve celebrations and another round of open houses—between bowl games—the next day. At one of these gatherings, chances are you'll be the host.

you can find an ideal champagne punch for your open house, the perfect wines and aperitifs to complement your Christmas dinner, and just about any wild libation your guests may request on New Year's Eve with just the touch of a fingertip.

Set your Apple behind your bar, and when Uncle Fred asks for a Godfather,

Glogg:

Glogg is a traditional Christmas drink in Scandinavia, where snow is ubiquitous and winter days are mostly nights. It's said to warm the soul as well as the body.

Pour into a large saucepot:

1 bottle wine (Claret, Port, Burgundy, Sherry, or Madeira)
2 ounces dried orange or lemon peels
6 strips cinnamon sticks
15 cardamom seeds
A dozen cloves
1 cup dark, seedless raisins
1 cup blanched almonds

Boil slowly for 15 minutes and stir occasionally. Remove from stove. Place 1 cup of lump sugar over sieve (wire grill) and put over top of saucepot; pour 1 fifth of favorite brandy over sugar (saturate) and ignite. After sugar has melted, put out flame with cover, stir and serve hot in mugs with a few raisins and almonds. Serves 12.

Apple Tends Bar. When you are, with the help of your willing hands, your Apple can serve as your bartender and wine steward.

With the new *Super Bar and Wine Guide* by Don Martin from Cine-Aero, your Christmas lady requests a Purple Orchid, or your man of the holidays shows a preference for a Lazy Dog, give your Apple the cue and your monitor will instantly show the recipes to fulfill their wishes.

APPLE BUSINESS SOFTWARE

GENERAL LEDGER

If you are a business person who is looking for ultimate performance, take a look at this outstanding General Ledger package from Small Business Computer Systems.

Our package features six digit account numbers, plus thirty-one character account names. We have ten levels of subtotals, giving you a more detailed income statement and balance sheet with up to nine departments. Either cash or accrual accounting methods may be used. The cash journal allows a thirty-three character transaction description and automatically calculates the proper off-setting entry. You may print the balance sheet and income statement for the current month, quarter, or any of the previous three quarters. Also, this year's or last year's total are included on the income statement, depending on the current month.

There is virtually no limit on entries, since you may process them as often as you like. Two thousand (1,000 from GL; 1,000 from any external source) can be processed in one session.

ACCOUNTS RECEIVABLE

Sound business management requires you to keep up-to-date reports regarding the status of your accounts receivable.

Now, from the same company that revolutionized accounting on the Apple II computer, with their conversion of the Osborne/McGraw-Hill General Ledger program, you may now obtain the Accounts Receivable package you have been waiting for.

Our package allows you to assign your own alpha-numeric customer code up to six characters. Date of the last activity, as well as amounts billed this year and last year are maintained. This Accounts Receivable system maintains six digit invoice numbers, six digit job numbers, invoice amount, shipping charges, sales tax (automatically calculated), total payments as well as progress billing information. You may enter an invoice at any time; before it's ready for billing, after you have billed it, and even after it's paid. This package also prints reports which list the invoices you have not billed yet, open items, paid items, and an aging analysis of open items.

In the final analysis, making your bookkeeping easier is what our software is all about. With our General Ledger package you can format your own balance sheet and income statement. Department financial statements may be formated differently. You have complete freedom to place titles and headings where you want them, skip lines or pages between accounts and generate subtotals and totals throughout the reports—up to ten levels if you need them. Accounts Receivable is designed to provide you with complete up-to-date information. The program will print customer statements as well as post invoice amounts to any of the accounts maintained by our General Ledger package. These packages will support any printer/interface combination. General Ledger requires 110 columns, Accounts Receivable requires 130 columns.

Suggested Retail:
Individually $180.00
Together $330.00

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Christmas Spirits

And, if you have a bunch of friends coming in after skiing or skating, ask Apple how to brew up a festive batch of steaming glogg to warm the iciest soul.

The Last Word in Wine. The *Bar and Wine Guide* puts the recipes for forty-two mixed drinks at your fingertips; it also lists fifty-four wines, recommends moderate-priced and expensive brand names and vintages, and tells the foods compatible with each.

When you have more time, you can refer to the guide to learn the background of each wine—its origin, the types of grapes used, the character. Press another key and find the proper pronunciation of each wine. There's even a glossary of terms commonly used in reference to wine. A section on wine tips dispenses wisdom about the usage, such as the appropriate times to serve which wines; storage, including how, where, at what temperature, and how long to store each wine; and serving—appropriate wine glasses, how long to chill, how far ahead to open, temperature for serving, for example—of the ancient beverage.

Enjoy your holiday entertaining, with Apple as cohost.

Don Martin's Suggestions for Holiday Libations.

Before Dinner:	
Champagne—Californian:	Korbel Natural
Champagne—French:	Pommery & Greno Blanc de Blanc, Vintage
or	
Cocktail Sherry:	Harvey's Tico Cocktail Sherry
With Turkey Dinner:	
Burgundy—Californian:	Souverain Burgundy
Burgundy—French:	Le Chambertin
or	
Cabernet Sauvignon:	Chateau St. Jean, 1977 Laurel Glen
or	
Zinfandel:	Hop Kiln Winery, 1978 Russian River Valley
or	
Johannisberg Riesling:	Buena Vista, 1978 Mendocino
With Goose Dinner:	
Gewurtztraminer:	Simi or Chateau St. Jean, 1979 Sonoma
After Dinner:	
French Sauterne:	Climens
or	
Port:	Croft Fine Ruby Port (Portuguese)
or	
Tokay:	Tokay Aszu

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MARKETALK

News

☐ "The twenty-first century equivalent of chess" is what **Muse** (Baltimore, MD) calls its new *Robot War.* Consisting of an action-filled battle between two to five robots, players have no control over the robots once the battle starts. But each robot must have had its microcomputer brain programmed by a human before it can take to the battlefield. Once in battle, the winner is the robot running the most effective battle strategy program. Robot's brains contain an accumulator, a pair of index registers, twenty-six memory registers, and seven input/output registers that control radar scans, aiming, shooting, assessing damage, and moving. You may program up to 256 instructions into one completed robot's computer-brain. 48K, disk. Price to be announced.

☐ Bob Sander-Cedarlof, owner of **S-C Software** (Richardson, TX), premiered a monthly newsletter called *Apple Assembly Line* in October. Publication is dedicated to Apple owners using assembly language and those who'd like to learn. Sander-Cedarlof is the author of the *S-C Assembler II Version 4.0.* Newsletter costs $12 per year. Write to S-C Software, P.O. Box 5537, Richardson, TX 75080.

☐ *The Mill* (**Stellation Two,** Santa Barbara, CA:) merely plugs into any Apple I/O slot and you have *two* interactive microprocessor capacities: 6502, the heart of your Apple, and the 6809. The 6809 gives you easy access and speed, plus multi-tasking. You can access and process information simultaneously. Package includes documentation consisting of circuit and block diagrams, complete programming manual, data sheet. $275.

☐ *Grow,* the first offering of a new company, **Computer Systems Design Group** (San Diego, CA), is like a prepared medium, ripe to accept your input. What can you input? Make study games and reviews for kids in school—ones that they can add to, that ask them for and accept descriptions or definitions. Apply any kind of question and answer uses. Best of all, invent adventure games. When you run *Grow,* you can say "extend" at any time, and the program will be ready to add patterns to recognize and actions to take when it sees those patterns, or to add an entirely new node, which it will ask you to describe. *Grow* automatically creates a numbered program from your input. You can edit what you've done with the same commands you use in editing Applesoft programs. 32K from ROM Applesoft, 48K with RAM Applesoft, disk.

☐ **Howard Software Services** (Los Angeles, CA) offers a labor-saving utility package for convenient control of program running and listing. *Program Controller* includes keyboard and paddle control of speed, keyboard control of listing format, rapid cursor control, real-time control of line printer, and easy display of memory pointers. Cassette or disk. $39.

☐ *The Stick* (**K&D Electronics,** Salt Lake City, UT). Born of frustration, this is a joystick using custom designed potentiometers and big soft buttons ("No holes in your finger after *Space Invaders*"). Guaranteed. $54.95.

☐ **Monument Computer Services** (Joshua Tree, CA) announces the *Assistant Principal,* a complete administrative package for high schools and junior high schools. Package provides total control of class rosters, student master records, student schedules, teacher assignments, and grade reporting. Automatically prints ranked class lists and records attendance information. Package comprises seven disks and a two-volume operating manual. ROM Applesoft, two disk drives. $500.

☐ **Adventure International** (Casselberry, FL) announces *Asteroids,* a real-time hi-res game with sound effects. Features novice, average, and expert skill levels. On top level, Asteroids are attracted to your ship. $19.95

☐ **Frisbee Electronics** (Ridgecrest, CA) announces a real-time clock for the Apple, the *Chrontronix ACV-1.* Three-year battery backup requires no recharging. Clock includes complete clock features plus programmable interrupts. Slot independent firmware allows easy access from Basic. Features include power-down ROM and high accuracy crystal. Software set to date forms, allow stopwatch functions, time conversions, is available on cassette or disk. $109.

☐ **Software Express** (Palo Alto, CA) offers the *Pascal Utility Express Package,* designed to help users with some programming experience in Basic get acquainted with UCSD Pascal. Four procedural units simplify input/output formatting, allow access to and change in disk directory from a Pascal program, perform integer, string, and real conversions, and support files of variable length records. Five sample programs include set of simple Pascal demos with listings of Basic equivalents, routine to view disk files in ASCII or hex, text formatter, and program to maintain a variable-length data file. Includes manual and disk with source code for user modification. Language System. $45. ◨

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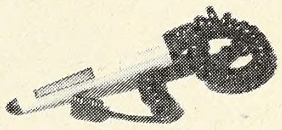
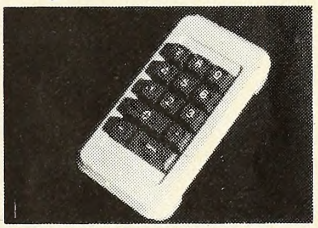


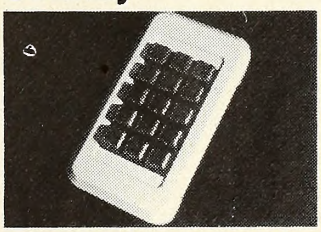
Compatible with U.P.C., Paperbyte**, LabelCode and others. It sells Point-of-Sale inventory systems, but is also useful in libraries, factories and for security.

KeyPad™



Used for entering numeric data, it is essential to business applications. It features an accountants keyboard layout and permits a relaxed arm position.

SoftKey™



A great programmer's aid, this features single key string entry and also customized key functions.

Available from your local APPLE Dealer*

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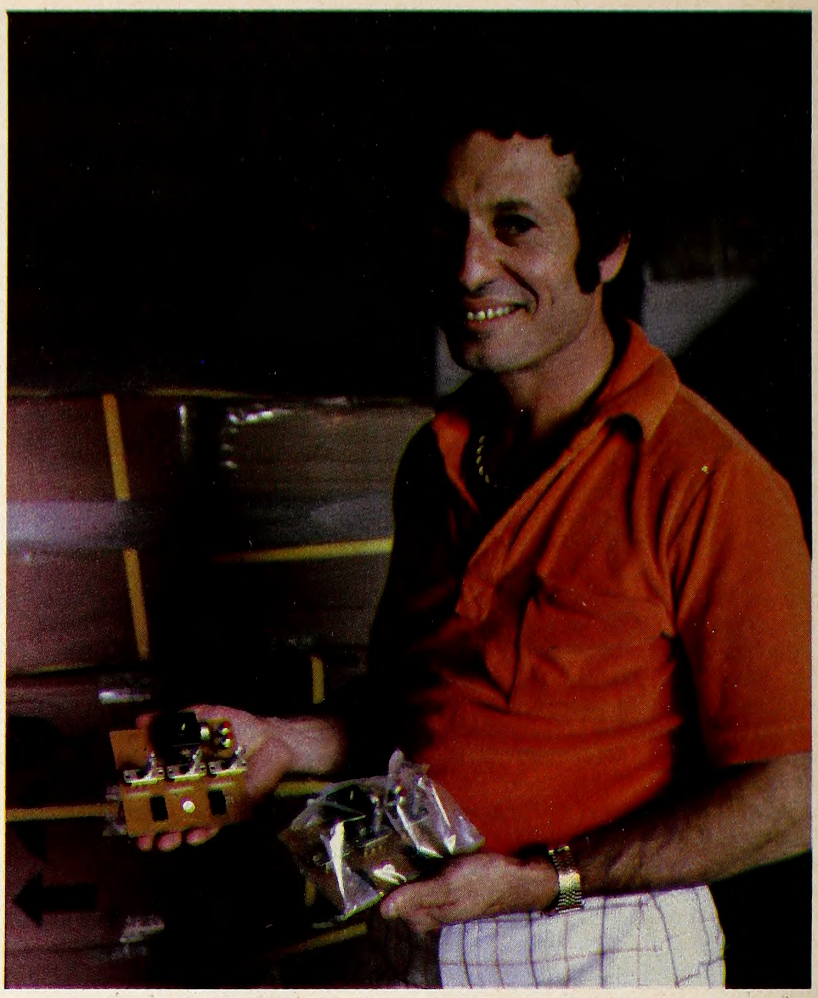

Softalk photo

Exec M&R: Pioneer in Peripherals

Marty Spergel of M&R Enterprises in Sunnyvale has two signs on his door that mean business. One says "UPS"; the other says: "Restricted Area, Trespassers Will Be Shot."

It was from behind this door, the door of the research and development lab, two and a half years ago, that M&R introduced their bestselling Super Mod II, which converts a television set into a monitor for the computer. And this is now the door through which the UPS man takes delivery of a daily load of Sup'R' Terminal boards that put eighty columns of upper and lower case characters onto the Apple's monitor.

You enter Spergel's office under the shadow of a wide-bellied U.S. Navy P-3 aircraft holding its flight path toward the Lockheed base three miles away across Silicon Valley in Santa Clara County. It was firms like Lockheed, Fairchild, National Semiconductor, and IBM at San Jose that were a major factor in the microcomputer industry being located in the valley; but, unlike those companies, the personal computer industry was born in a garage—in Palo Alto.

A Hobby Group of Who's Whos. If memories are made of this, so were quite a few companies, as Spergel recalls: "It was Gordon French's garage, to be exact, at the meetings of the Homebrew Users Group, that I date the beginning of the personal computing game. Hal Singer had started a Homebrew Club out in Fresno or Modesto, but we had the industry down here. My meeting with Bob Albrecht was another turning point for me. Offhand, I can remember Dan Socal, Bob Marsh, Steve Wozniak, Steve Jobs, Steve Dompierre, Keith Britton, Peter Mullen of Mullen Computer Boards."

Spergel's roll-call from memory reads like a *Who's Who in Computers*. "A lot of those people went on to found some big companies—Wozniak and Jobs with Apple; Dompierre and Marsh, Processor Technology. It was Felsenstein who designed the SOL. Still other members founded software publishing houses.

"Lee also designed the penny whistle Acoustic Coupler 103 Modem for us; it appeared on the cover of *Popular Electronics* in, I believe, 1976, and things just seemed to mushroom."

Not all the firms that started then did well. Some folded because of poor management, others for lack of capital. Gordon French is still going with Square One, the floppy armor company. Felsenstein is still involved with the Peoples Computer Company.

Marty remembers the atmosphere that was engendered by news of new developments in the field.

"We had a lot of engineers from some of the big companies there, too. If something new was developed, the Homebrew Users Group knew about it at the Wednesday night meetings. An engineer would stand up at the meeting and say something like: 'We have a new I.C. coming off the line. This is how it works, but don't tell anyone I told you!'

"The Club is still going. I was invited to the five-year reunion party, but, unfortunately, I was abroad; I hope to make it to the ten-year reunion though."

From Back Rooms to Megabucks. Those were the days, back in 1973, when the prototype of the Apple itself was being carried around in a cigar box, and Wozniak and Jobs had to sell a calculator and a van to raise money to build the Apple I. "Everybody was buying Altairs at the time. Imagine, you had to load in 8K of memory by single step instructions!" He laughs at the archaic thought.

At the same time, Spergel and his wife Rona, the other initial in M&R, were packing component kits until two o'clock each morning in their back room for shipping via UPS that day.

From his present vantage point as president of a multi-million-dollar electronics company with diversified interests including real estate and finance, Spergel can only smile and shake his head at the astounding road to success of some of his friends, contemporaries, and earliest customers.

"We sold diodes, capacitors, and crystals to the other members of the Homebrew Club. We made many friends who remain so to this day. Everybody knows everybody else down here. M&R has been going seven years now and that's a long time in this industry. Perhaps that's

why we can get away with having a company with initials and the word enterprise for a name and a P.O. box number for an address. Usually, if you see that combination, the first thing you think is 'Flake!' Some years ago, we did consider changing it, but Rona said, 'Everybody knows us by now!' So I thought, what the hell, it stays."

A classic milestone in the industry was the day Radio Electronics came out with the Mark 8 Microcomputer kit with the original 8008 central processing unit (CPU) designed by Intel. Spergel recalls that Bob Albrecht's founding of the Peoples Computer Company was another highwater mark. "Bob was into adapting computers for children's education. There was a doctor there, too, who had a dream to design something to aid a severely disabled patient of his. He eventually did, too!" It was that kind of place.

When the Chips Are Down. While producing some highly successful peripherals for the Apple, M&R still deals in capacitors, diodes, and integrated circuits, with nine million of them per annum manufactured and shipped from overseas direct to their OEMs, bypassing his already bulging Sunnyvale warehouses and packaging plant.

It was his talent for global logistics that, when the chips were down and unavailable, enabled Spergel to activate his multitude of worldwide contacts to pull quite a few companies through. "In those days, I had phone bills of nineteen hundred dollars per month, and they were really frightening bills for that time, too!"

Spergel manages to keep a global perspective through industry magazines from places as far apart as England, China, Japan, and the Middle East. He quotes off the top of his head: "Iran has enough computer data-processing power to serve the entire needs of the Middle East." Picking a magazine out of his library, he finds the article he's looking for and points out the statistic, then adds, "It can't be doing them much good though, since American firms pulled out all their technical people."

Playing It Cool with Apple. Passing through the portals into the sacrosanct R&D lab, Spergel removes the cover from an Apple to reveal a silent spinning fan in a compact Apple-colored casing bolted to the wall of the computer. He places his finger into the rotating blades and smiles smugly as the fan stops instantly; he removes his fingers and the fan resumes its function of drawing air from outside and circulating it. He cocks his ear and says: "Note how it doesn't make any noise at all? Also, it's AC line operated, so it doesn't take any of the Apple's power supply.

"Originally, it was a toss-up as to whether the Apple should have four slots or eight slots for peripherals. Well, they chose eight slots, so people put all kinds of peripherals into the eight slots; but that's no good for the Apple, because the heat can build up under the cover.

"So we developed this fan, which is due for shipping to retail at $49.95. Basically, this will increase the life of the integrated circuits. People have two thousand to three thousand dollars tied up in their equipment, so the fifty-dollar fan has got to be a good investment. The big mainframes have fans—the IBMs, PDP 11s, Cromemcos. Everyone thought the Apple was too small to have one, and this is true to some degree if you are only using a few peripherals." But Apples with many peripherals can greatly benefit from the air circulation provided by the new fan. "We are very pleased with it, very pleased, indeed."

Spergel threads his way through the laboratory, sits on a high stool at a workbench, and gestures to the hardware development continually being undertaken: "Software development just cannot keep pace with the hardware. Apple is in a good position though; I reckon it is three years ahead of its nearest competitors in software development. Look at it this way, there is more software being written for the Apple II on an hourly basis than for every IBM mainframe ever produced since IBM's inception.

"That may sound like comparing Apples to oranges, but the point is that computer power has arrived for the average American.

"The other good move Apple made was to design the Apple III to emulate the Apple II model, which means that all that software is not obsolete!

"I have never ceased to be amazed at the dedication and enthusiasm of Apple users. The clubs play a very big part in this and Apple appears to adopt the K.I.S.S. approach to marketing, which means, essentially, keep it simple. I think Atari made a very big mistake by not giving its schematics to anyone. Also, the Atari doesn't have the expansion capability of the Apple. TRS-80 is not much better; you are practically locked in with its products."

The Last Word in Electronics. Spergel hasn't lost the enthusiasms he started out with, nor his Brooklyn sense of humor. Seeing that Apple and Atari were at the front of the directory, he decided to have a company that would be "the last word in electronics." So he began a subsidiary, ZZYXX, as a rear-guard action.

The words with which Spergel closed the interview, delivered with a passionate optimism, will warm the hearts of innovators and cause inventors' imaginations to leap like salmon from their pools of wisdom. "Right now, there is somebody out there, in a back room or garage, wire-wrapping something that will profoundly affect the industry.

"When a stranger knocks on your door around here and says, 'I've got an idea,' you bring him in, sit him down, give him a coffee, and discuss it. In this game, you can't afford not to!" ◻■

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Softalk Presents The Bestsellers

VisiCalc and *Hi-Res Adventure #2: The Wizard and the Princess* held their positions as the two top programs from October's bestseller list, but *Star Cruiser* from Sirius Software, in its first month of release, zoomed into the third spot.

Rounding out the top five were *Flight Simulator* from SubLogic, retaining its fourth position, and *CCA Data Management System* from Personal Software.

Star Cruiser is the latest evolution of the *Space Invader* genre and its existence, coupled with the presence on the top thirty list of Creative Computing Software's *Space Invaders*, is indicative of the continuing popularity of the genre. Cumulative sales of the two programs place this type of game a strong second.

The same phenomenon is also noted with respect to the *Asteriods* genre. Quality's *Asteroids in Space* held on to a position in the top ten, slipping from sixth to seventh. But its sales were cut into by the introduction of *Asteroids* from Adventure International, which made twenty-eighth. Cumulatively, the two programs would have ranked third.

Two other new programs made the top ten in October—*DOS Tool Kit* from Apple Computer Inc. and *Hellfire Warriors* from Automated Simulations. Both were in their first full month of general release.

Just missing the top ten were Microlab's *Dogfight*, which nabbed eleventh, and Strategic Simulations's *Computer Quarterback*, which was twelfth.

Other programs new to the top thirty were *Ghost Town*, ninth in the series of Scott Adams's adventures from Adventure International, *Galactic Trader* from Broderbund, and *SuperText II* from Muse.

The continuing popularity of word processors for the Apple is indicated not only by the arrival of *SuperText II*, but also by the continuing presence on the top thirty of *Easy Writer* from Information Unlimited. In addition, *Apple Writer* from Apple Computing was thirty-first and Programma's *P.I.E. Word Processor* made a strong challenge.

Although entertainment programs continue to dominate the top thirty, the strong showing by several nonentertainment programs, clearly paced by *VisiCalc*, is indicative of the more serious purposes to which the Apple is being applied. Much of the business, utility, and educational software regularly ranks fortieth through sixtieth, never making the top thirty but always making a consistent showing in the marketplace.

On an individual basis Ken and Roberta Williams of On-Line Systems, Bill Budge from California Pacific, and Bob Clardy from Synergistic Software have a new challenger. With the advent of Galactic Trader from Broderbund Software, Doug Carlston has three programs in the top thirty. Carlston is still fourth ranked by virtue of the strong showings of programs by the others that did not make the top thirty.

Retailers reported October's sales as being significantly stronger than September's. The importance of this is indicated by the fact that some of the programs that dropped in ratings or dropped off the top thirty actually had sales equal to or better than they did in September. However, stronger sales by new programs and competitors resulted in their lower ranking.

Beginning this month, the top thirty listing shows the author of each program wherever that information was available. ❑■

The Top Thirty

1.	1.	97.34	*VisiCalc,* Software Arts/Dan Bricklin and Robert Frankston, Personal Software
2.	2.	60.43	*Hi-Res Adventure #2: The Wizard and the Princess,* Ken and Roberta Williams, On-Line Systems
3.	—	52.39	*Star Cruiser,* Nasir, Sirius Software
4.	4.	50.01	*Flight Simulator,* Bruce Artwick, SubLogic
5.	18.	40.19	*CCA Data Management System,* Creative Computer Applications/Ben Herman, Personal Software
6.	8.	38.70	*Bill Budge's Space Album,* Bill Budge, California Pacific
7.	6.	37.21	*Asteroids in Space,* Bruce Wallace, Quality Software
8.	—	35.72	*DOS Tool Kit,* Apple Computer Inc.
9.	—	31.26	*Hellfire Warriors,* Automated Simulations
10.	5.	30.96	*Apple Plot,* Apple Computer Inc.
11.	—	27.68	*Dogfight,* Bill Basham, Microlab
12.	—	25.60	*Computer Quarterback,* Dan Bunten, Strategic Simulations
13.	11.	24.11	*Galactic Empire,* Doug Carlston, Broderbund Software
14.	9.	23.81	*Odyssey,* Bob Clardy, Synergistic Software
15.	—	23.52	*Super Invader,* M. Hata, Creative Computing Software
16.	16.	22.92	*Temple of Apshai,* Automated Simulations
	7.	22.92	*Sargon,* Dan and Kathe Spracklen, Hayden
18.	14.	22.62	*Easy Writer,* John Draper, Information Unlimited
19.	28.	22.32	*Data Factory,* Bill Passauer, Microlab
	3.	22.32	*Bill Budge's 3-D Graphics System,* Bill Budge, California Pacific
21.	13.	22.03	*Typing Tutor,* Image Producers, Microsoft
22.	—	20.24	*Galactic Trader,* Doug Carlston, Broderbund Software
23.	10.	19.94	*Hi-Res Adventure #1: Mystery House,* Ken and Roberta Williams, On-Line Systems
24.	—	17.26	*Ghost Town: Adventure #9,* Scott Adams, Adventure International
25.	21.	16.97	*Adventure,* Software Associates/Gordon Letwin, Microsoft
26.	21.	16.67	*Galactic Revolution,* Douglas Carlston, Broderbund Software
27.	15.	16.37	*Rescue at Rigel,* Automated Simulations
28.	—	16.08	*Asteroids,* Marc Goodman, Adventure International
29.	—	14.88	*SuperText II,* Ed Zaron, Muse
30.	19.	14.29	*Wilderness Campaign,* Bob Clardy, Synergistic Software

Apple-franchised retail stores representing approximately 15 percent of all sales of Apple and Apple-related products volunteered to participate in the poll.

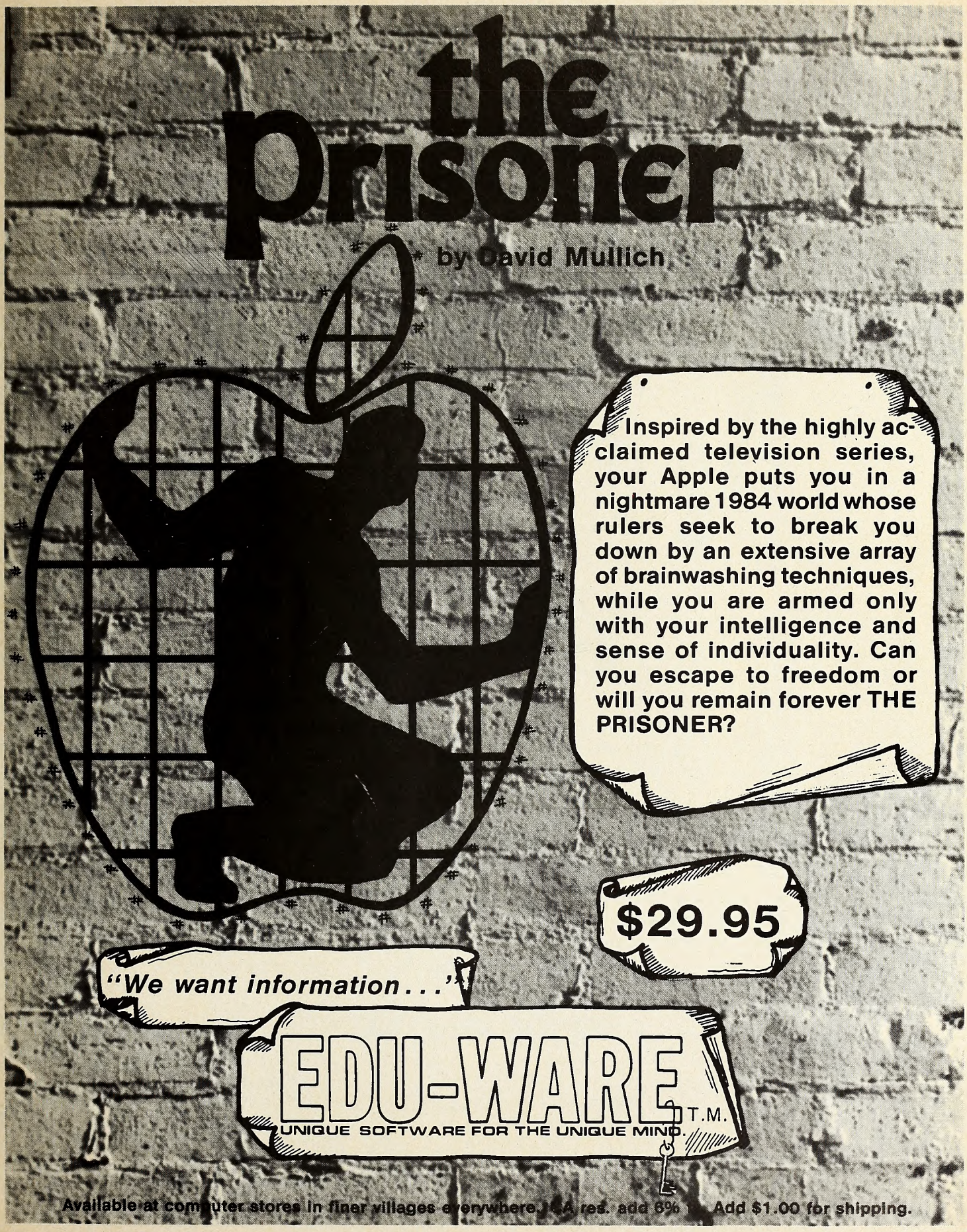
Respondents were contacted early in November to ascertain their sales leaders for the month of October.

The only criterion for inclusion on the list was number of sales made—such other criteria as quality of product, profitability to the computer retailer, and personal preference of the individual respondents were not considered.

Respondents in November represented every geographical area of the continental United States as well as Alaska and Hawaii.

Results of the responses were tabulated using a formula that resulted in the index number to the left of the program name in the Top Thirty listing. The index number is an arbitrary measure of relative strength of the programs listed. Index numbers are correlative only for the month in which they are printed; readers cannot assume that an index rating of 50 in one month represents equivalent sales to an index number of 50 in another month.

Probability of statistical error is plus-or-minus 3 percent, which translates roughly into the theoretical possibility of a change of two points, plus or minus, in any index number.



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